Imperial Census of 1881.

OPERATIONS AND RESULTS

IN

THE PRESIDENCY OF MADRAS.

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APPENDIX A.

MEMORANDUM.

For the solution of questions relating to a population and for the due examination and elucidation of the Census returns relating to it, a Life Table specially calculated for it, is of the utmost importance. In the following paper I propose to give the method which I have adopted in calculating a Native Life Table for the Madras Presidency together with that table.

Before proceeding to the calculation proper of such a Life Table it is necessary :—

(1*st*) to ascertain the normal rate of increase of the Madras population ;

(2*nd*) to determine the loss of population by emigration and the ages on which it falls, and for the calculation of the Probability of Life it is further necessary

(3*rd*) to ascertain the rate of omission in the Birth and Death Returns for the Presidency and to verify the rates so ascertained ;

(4*th*) to calculate from the deaths out of the births the probability of living through the 1st, the 2nd, and the 3rd years of age ;

(5*th*) to correct the errors in regard to age in the Census returns of 1871 ;

(6*th*) to determine the true death-rate for a Madras population ;

and, lastly, from the above to calculate the probability of living through each year of age.

(1*st*) *To ascertain the normal rate of increase of the Madras Population.*

In 1849 the Government of India desired the Madras Government to establish, by means of its Revenue officials, quinquennial returns of population such as had been ordered in the North-West Provinces. The first of these returns was taken in 1851-52, the second in 1856-57, the third in 1861-62, the fourth and last in 1866-67. These censuses were taken under an admirable code of instructions, which are printed at length in the 1871 Census Report. The agency and the method on which they were taken were the same in all the enumerations. It is of importance to establish the exact date on which each enumeration was made, but this I have not been able to do, though search has twice been made in the Board's Office. The fact is probably that these enumerations were not synchronous in all districts. It has been ascertained that the Census of 1851-52 was taken in Fasli 1260. Since it was taken in the official year 1851-52, it must therefore have been taken in all districts some time between the 1st April and the 1st July 1851. I shall assume it to have been taken on the 1st May 1851. Similarly the Census of 1856-57, it may be assumed, was taken on the 1st May 1856. It has been ascertained that the Census of 1861-62 was taken on the 1st May 1862, except in Vizagapatam, where it was taken on the 15th May, and that the Census of 1866-67 was taken on the 1st March 1867.

The results of these censuses are given below .—

Madras Population according to different Censuses, 1851 *to* 1867.

Districts	Census of 1851-52 (Fasli 1261)			Census of 1856-57 (Fasli 1266)			Census of 1861-62 (Fasli 1271)			Census of 1866-67 (Fasli 1276)		
	Males	Females	Total	Males	Females	Total.	Males	Females	Total	Males	Females	Total
Ganjam	475,445	451 485	926,930	Not available		949,747	584 047	552,879	1,136,926	650 482	585,308	1,235,790
Vizagapatam	645,323	608,949	1,254,272	670,272	613,971	1,284,243	746,859	668,793	1,415,652	1,003,600	930,958	1,934 558
Godavari	514,703	497 133	1,012 036	547,216	534,487	1,081,703	696,227	670,604	1,366,831	722,713	704,789	1,427 472
Masulipatam } Kistna {	282,178	238,688	520 866	328,455	295,353	623 808	} 615,436	578,985	1,194,421	664,088	632,564	1,296,652
Guntur } Kistna {	290 526	279,557	570,083	302,113	291,100	593,213						
Nellore	485,418	450,272	935 690	499,947	452,085	952,032	527,035	472,219	999,254	605,955	562,709	1,168,664
Cuddapah	759,121	692,800	1,451,921	704,362	646,789	1,351,151	562,236	487,868	1,050,104	597 661	547,098	1,144,759
Bellary	643,371	586 228	1,229 599	618,207	562,880	1,181,087	647,675	586,999	1,234,674	680 098	624,300	1,304,998
Kurnool	140,529	132 661	273 190	Not available		287,726	377,550	348,218	725,768	397,479	373,378	770,857
Chingleput	303,705	279,757	583,462	314,964	290 257	605,221	740,934	325,486	676,390	413,366	390 917	804 283
North Arcot	762,715	723,158	1,485,873	811,884	776,370	1,588,104	849,990	804,567	1,654,557	Not available		1,787,134
South Arcot	532,087	473,918	1,006,005	605,195	530,766	1,135,961	594,460	533,970	1,128,430	658 184	603 602	1,261,846
Tanjore	841,120	834 966	1,676,086	821 883	835,402	1,657,285	815,384	836,786	1,652,170	851,855	879 764	1,731,619
Trichinopoly	360,325	348,871	709,196	414 603	394,977	809,580	481,633	457,767	939,400	504 245	502,581	1,006,826
Madura	883,123	873,668	1,756,791	897,720	895,017	1,792,737	927,734	928,672	1,856,406	968,115	978,274	1,946,389
Tinnevelly	636,723	632,493	1,269,216	668,685	670,689	1,339,374	684,244	685,977	1,370,221	754,391	766,777	1,521,168
Coimbatore } Nilgiris {	577,128	576,734	1,153,862	600,817	576,014	1,176,831	619,425	596,495	1,215,920	735,370	705,368	1,440,738
Salem	609,872	585,506	1,195,377	646,246	621,954	1,268,200	754,307	738,914	1,493 221	819,218	800,015	1,619,233
North Canara } South Canara {	542,769	513 564	1,056,333	581,848	545,090	1,126,938	401,464	386,578	788,042	{ 426,780	412 958	839 688
Malabar	769,932	750,977	1,514,909	812,190	790,724	1,602,914	857,180	851,901	1,709,081	931,040	925 338	1,856,378
Total	11,050,113	10,581,564	21,561,697	10,846,557	10,323,825	22,407,856	12,093,220	11,513 648	23,606,468	12,875,190	11,926,728	26,069,052
Madras Town (estimated population)			450 000			450,000			450,000			450,000
Add population for which sex particulars were not furnished by Collectors— Vizagapatam									300,000			
Tinnevelly									300,041			
Grand Total			22,061,697			22,857,856			24,656,509			26,569,052

"In the arrangements for taking a quinquennial census the machinery of the village community, so admirably adapted for the collection of statistical data referring to limited communities, was inapplicable to the circumstances of large towns, in regard to which it seems probable that the quinquennial stock-taking of the population was a subject of estimate rather than of actual compilation, seeing that no arrangements were made for the appointment of special enumerators for towns before the Census of 1871." The returns for the rural tracts were probably sufficiently accurate. The town population is comparatively small, and since the system of enumeration was equally bad in all the enumerations, while the agency and method were identical, the rate of error was probably constant throughout, and we can deduce the true rate of increase of the population from these enumerations.

In doing so it is necessary to remember that the village agency in Zemindaries is not altogether under the control of the Revenue officers, and that the statistical returns furnished for such tracts are always open to suspicion. Since, therefore, the Ganjam and North Arcot returns are defective in sex-particulars in one year, it will be better, I think, to omit the returns of these districts. In Vizagapatam also it is clear from the statement that the Jeypore population has been included on a mere estimate in the 1866-67 enumeration, while it has been separately shown in that of 1861-62 and omitted in the other two. I therefore also reject the return of this district. There is also something wrong in the Tinnevelly returns in the third enumeration, and these too must be rejected. A large portion of North Canara was made over to Bombay prior to 1862. It is impossible to distinguish the population thus made over, and this whole population must therefore be rejected. In Kurnool in one enumeration the sex-particulars are omitted. To reject this population would mean the rejection of Kistna, Nellore, Cuddapah, and probably Bellary, from portions of which the new Kurnool District was formed. I have therefore distributed the population given in the 1856-57 enumeration for that district (287,726) in the proportion of the total males to total females in that enumeration. The populations left total as under:—

Years.	Males.	Females.	Total.
1st May 1851	7,987,138	7,601,935	15,589,073
Do. 1856	8,261,221	7,858,228	16,119,449
Do. 1862	8,826,216	8,414,854	17,241,070
1st March 1867	9,539,987	9,230,727	18,770,714
1st May 1867 (estimated).	9,565,674	9,260,312	18,825,986

Populations increase naturally in equal proportions in equal times; that is, if x be the number of units in any period of time and P^o the population at the beginning of the period, and r be the rate of increase,

$P^o r^x$ = population at the end of the period .....(A)

The figures in the last paragraph show that, allowing for errors of enumeration, the population of Madras was probably increasing in a natural way. By the method of differences, the population on the 1st May 1859 was 16,594,830, viz., 8,505,760 males and 8,089,070 females. From the 1st May 1851 to the 1st May 1859 is 2,922 days, allowing for leap years. In Madras, therefore,

$$15{,}589{,}073\ r^{2922} = 16{,}594{,}830$$
$$\text{and } \lambda\ (r^{365}) = 0{\cdot}0033918$$

The latter is the annual rate of increase among the population. It will be convenient to use λr to signify this logarithm, and when the rate of increase of the population without any qualification is spoken of to understand only the annual rate of increase.

$$\text{Thus } \lambda r = 0{\cdot}0033918$$

The above (r) is the rate of increase at all ages. In the absence of data we must assume it the rate of increase at every age.

The fact above established may be more popularly stated to be that the rate of increase of a Madras population per mille per annum in normal times is for persons 7·83. It will be subsequently shown that the increase per mille per annum is for males 7·89 and for females 7·78.

(2*nd*) *To determine the loss of population by emigration and the ages on which it falls.*

Emigration and immigration take place by land and by sea. We have unfortunately no detailed information as to the land immigration or emigration. Land immigration in any degree takes place only to the Wynaad, and the coolies remain there at the most but nine months. There is no marked stream of land emigration.

Emigration by sea takes place from the Madras Presidency chiefly to Ceylon, Mauritius, Natal, Réunion, the West Indies, and British Burmah.

Emigration to Ceylon takes place entirely from the districts of Madura, Tanjore, and Tinnevelly. Between the 1st November 1870 and 1st November 1876 the number of emigrants and immigrants, *i.e.*, returned emigrants, and loss of population was as shown in the annexed statement:—

Districts.	Emigrants.	Immigrants.	Loss.
Madura	432,372	296,916	135,456
Tinnevelly	127,698	110,498	17,200
Tanjore	66,189	48,764	17,425
Total ...	626,259	456,178	170,081

Of emigrants and immigrants in the ten years from 1st November 1870 to 1st November 1880 the classification by sex and age of the numbers as shown below is given. No classification is given for Tanjore:—

——	District.	Men.	Women.	Children.	Persons.
Emigrants	Madura	91,274	32,044	5,922	129,240
	Tinnevelly ...	63,457	11,337	5,606	80,400
Immigrants	Madura	82,353	21,364	3,239	106,956
	Tinnevelly ...	91,083	16,387	5,683	113,153

The unclassified emigrants were distributed as men, women, and children in the proportions thus ascertained. The numbers for the Tanjore District were distributed proportionately to the totals of the other two.

For the six years from the 1st November 1870 to 1st November 1876 the figures relating to emigration to the Mauritius, Natal, Réunion, and the West Indies are as follows:—

Country.	Emigrants.	Immigrants.	Loss (−) or Gain (+)
Mauritius	5,523	6,399	+ 876
Natal	Stopped.	1,509	+ 1,509
Réunion and West Indies.	4,231	4,481	+ 250
Total ...	9,754	12,389	+ 2,635

The emigrants for Réunion and the West Indies embark from the French ports of Pondicherry and Karikal. The Protector of Emigrants, therefore, was unable to give information as to their numbers. The number of intending emigrants registered before him was, however, 4,231 between 1st November 1870 and 1st November 1876, and 6,853 between 1st November 1870 and 1st November 1880. On the data, therefore, the loss of population (there can be in reality no gain) owing to this emigration must be quite unimportant, and has been taken as *nil* for the six years in question.

It is necessary also to know the loss of population in the ten years from 1st November 1870 to 1st November 1880. It is as under:—

Countries.	Emigrants.	Immigrants.	Loss (−) or Gain (+)
Ceylon	999,196	776,601	− 222,595
Natal	7,054	1,935	− 5,119
Mauritius	10,690	8,940	− 1,750
Réunion and West Indies ...	6,853	10,074	+ 3,221
Total ...	1,023,793	797,550	− 226,243

There is also emigration to and immigration from Burmah and the Northern Circars, but I have no information regarding it, nor is any available I believe. As the coolies go but for a year, or at most two, and go but little beyond Rangoon, this emigration can exercise practically no influence on the population of the Madras Presidency.

It is necessary further to know the ages on which the loss of population by emigration falls. In the case of the emigrants to Ceylon no further classification than that of men, women, and children is officially attempted, but in the case of those going to Natal and the

Mauritius the ages are more exactly noted. The ages of the emigrants to these places during the ten years from 1st November 1870 to 1st November 1880 were as follows :—

Age.	Males.	Females.	Total.
0 and under 2	282	275	557
2 „ 10	1,060	1,014	2,074
10 „ 20	1,793	1,004	2,797
20 „ 30	5,006	2,502	7,508
30 „ 40	3,285	745	4,030
40 „ 50	563	178	741
Above 50	19	18	37
Total ...	12,008	5,736	17,744

The immigrants, *i.e.*, return emigrants whether coming from Ceylon or elsewhere, are only classed as men, women, and male and female children. I have taken the term children in all cases to mean persons under ten.

The Statement No. 2-A appended was prepared by ascertaining the loss of population in each class, and since the persons so lost must be entirely emigrants, the ages were taken for male and female adults and children in the proportion which the totals above and under ten bear to the number in each age period as ascertained from the Natal and Mauritius Returns. From the sums so obtained the numbers in each year under 20 given in Statement No. 2-B were obtained by the method of differences.

(3rd) *To ascertain the Rate of omission in the Birth and Death Returns and to verify the rates so ascertained.*

The population between the ages 0 and a at the beginning of any period of x years, *plus* the additions to it from all causes between those ages, *minus* the decrement from all causes between those ages, *minus* the population between those ages living at the end of the period, gives the years of life enjoyed by the population in the year of age a during the period in question,

$$\text{or } P^0_{o/a} + B_{o/a} - D_{o/a} - P^1_{o/a} = y_a$$

$$\text{or by (A)} \qquad B_{o/a} - D_{o/a} = y_a + P^0_{o/a}(r^x - 1) \ldots\ldots\ldots\ldots\ldots\ldots \text{(B)}$$

Where 0 and a are the age limits, P^0 = population between those limits of age at the beginning of the time (x), B = additions to that population, D = its decrement, P^1 = the population at the end of the period, and r is the annual rate of increase;

If a be taken equal to the greatest age to which any member of the population attains, $P^0_{o/a}$ = the population of all ages; and $y_a = o$; and therefore the population of all ages at the beginning of the time (x) *plus* the additions to it (B), *minus* the decrement (D) = population at the end of the period,

$$\text{or } B_{o/a} - D_{o/a} = P^0_{o/a}(r^x - 1) \ldots\ldots\ldots\ldots\ldots\ldots \text{(C)}$$

From Dr. Farr's English life-table No. 3, p. xviii,

$$y_x = \frac{kP^0}{\lambda r}(r^x - 1)$$

r being the assumed rate of increase, λr its logarithm, k the modulus of the common logarithms, P^0 the population at the beginning of the period, and x the time in years; or by logarithms

$$\lambda y_x = \lambda P^0 + \lambda k + \kappa\lambda r + \lambda(r^x - 1) \ldots\ldots\ldots\ldots\ldots\ldots \text{(D)}$$

Here in the expression $\kappa(\lambda r)$ the quantity λr is treated as a number, and $\kappa(\lambda r)$ is the complement of the logarithm of that number.

The Madras population in the age period 0 and under 6 is given in the 1871 Census Report; that for the period 0 and under 5 is also given. The population in the sixth year is therefore known. If in equation D, x be taken as the six years from the 1st November 1870 to 1st November 1876 and P^0 be taken as the population in the sixth year on the 1st November 1870, then the value of y_x will be the years of life enjoyed by the population in the sixth year of age between the 1st November 1870 and 1st November 1876.

Additions to a population (B) take place either (1) by births or (2) by immigration. The decrement (D) arises either from (1) deaths or (2) emigration. Immigration and emigration take place (1) by sea, (2) by land. We have returns of immigration and emigration by sea, which are discussed above. We have no detailed information as to land immigration and emigra-

tion. It is not, however, considerable, and the one may be assumed to balance the other. Thus cancelling the land immigration and emigration one against the other and calling the difference between the emigration and immigration by sea E, B = the births (b) and D = the deaths (d) + E. Thus making $x = 6$, *i.e.*, the years from the 1st November 1870 to the 1st November 1876,

by equation (B) $$b - d_{0/a} = y_a + P_{0/a}(r^6 - 1) + E_{0/a}$$

Taking in the expression (B) a equal to 6, and in (C) to 105, *i.e.*, all ages

$$b - d_{0/6} = y_6 + P_{0/a}(r^6 - 1) + E_{0/6} = \text{(say) K} \ldots\ldots\ldots\ldots \text{(E)}$$

and by equation (C) $$b - d_{0/105} = P^0_{0/105}(r^6 - 1) + E_{0/105} = \text{(say) L} \ldots\ldots\ldots\ldots \text{(F)}$$

Now for the Madras population the value of y_6 can be obtained from the formula (D); $P^0_{0/6}$ and $P^0_{0\ 105}$ are known from the census returns; r the annual rate of increase is determined on pages i and ii *supra*, and $E_{0/6}$ and $E_{0/105}$ from the Statements Nos. 2-A and 2-B appended; the right hand side of the equations (E) and (F) is known; therefore subtracting

$$d_{0\ 105} - d_{0/6} = K - L \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(G)}$$

Death registration in the Madras City is compulsory by law. The Municipal authorities have had for many years control of the burial and burning grounds. The registration is, therefore, very fairly complete. We have in but two districts in the Madras Presidency a rural population, *i.e.*, a population dwelling in open detached homesteads: every village is as closely packed, as unclean, and as prejudicial to health as the largest city. There is no immigration into the city. There has been no marked increase or decrease of the city population for many years prior to 1876, while the rural population also has been steadily increasing. There are no trades specially injurious to health followed in the city. The city is in fact but a collection of up-country villages of the ordinary types, modified owing to its being the seat of Government and the terminus of the railways. There is no reason why the ratio of the number of deaths below six to the whole number should be materially different in the Madras City native population to what it is elsewhere. Prior to 1871 the late Mr. Gover compiled the death statistics of the Madras City for the years 1861 to 1871 with, I believe, considerable personal care. From these returns is obtained the value of the ratio

$$\frac{d_{0\ 6}}{d_{0/105}} = \frac{42447}{123059} = \cdot 34493.$$

The values of b and $d_{0/105}$ can therefore be found from this and the equations E and F.

It is also necessary to know the value of $\frac{d_{0/1}}{d_{0/6}}$. Its value is $\frac{26260}{42447}$ and its logarithm $1\cdot7914477$. Again, interpolating by the method of differences in the original Madras City returns the value of $\frac{d_{6/12}}{d_{0/105}} = \frac{6097}{123059}$ and its logarithm $\bar{2}\cdot6950028$.

From the above considerations the following rates of omission, *i.e.*, multipliers, by which the births and deaths as returned must be multiplied in order that the actual births and deaths may be found are obtained:—

Ages.	Rate of omission.	λ of Rate.
	Births.	
... .	2·177	0 3379099
	Deaths.	
0 and under 1 ...	2·202	0 3427524
1 „ 6 ...	1·545	0·1888065
6 „ 12 ...	1·441	0·1585826
Other ages	1·806	0·2568032

Put more popularly the above results may be stated to be, that for every 100 births returned 218 actually occur; for every 100 deaths under 1 year returned 220 actually occur; for every 100 deaths between one and six years of age returned 154 actually occur; for every 100 deaths between 6 and 12 returned 144 actually occur, and for every 100 deaths at all other ages returned 181 actually occur.

The Balance of Population.

It is probable that the rate of omission in the Presidency returns both for births and deaths is constant from year to year, since the number of returning officers, probably over 50,000, is so large. The births returned as occurring between the 1st November 1871 and the 1st November 1880 (*see* Table No. 1 appended) are:—

Ages.	As registered.	As corrected by the above Rates.
	Births.	
.....	5,093,626	11,090,160
	Deaths.	
0 and under 1	905,201	1,992,955
1 „ 6	987,840	1,525,780
6 „ 12	480,514	692,291
All other ages	4,233,165	7,629,063
Total . .	6,606,720	11,830,089

From equation (C) we get the balance of population as follows :—

Population exclusive of that in the Ganjam Maliahs, Jeypore, and the State of Puducotta on 1st November 1871	30,826,300
Add Births	11,090,160
Total ...	41,916,460
Deduct Deaths	11,830,089
$E_{0/105}$ for 10 years	226,243
Total ...	12,056,332
Population, 1st November 1880	29,860,128

It is now two years since the famine, and these years have, on the whole, been above the average. The birth and death rates have again become as in normal times, and it seems certain, therefore, that the population has again begun to increase. Assuming the same rate of increase as before, the population on the 17th February 1881 ought, therefore, to be 29,930,834, but the final Census returns of the population show the population to have been on that date 29,916,629. According to the uncorrected birth and death returns the population ought to have been 29,145,888.

The difference between the births and deaths in a given period depends in a population like that of Madras practically unaffected by immigration or emigration, solely on the rate of increase of the whole population. It will be observed that the estimated population on the 17th February very nearly coincides with that actually found independently by enumeration. This very approximate coincidence depends on the relation of the rate of omission in the return of births to that in the return of deaths, and this relation again depends on the rate of increase used in the calculation of those rates of omission. There is only one rate of increase which can produce a given difference between the births and deaths. The nearness of the estimate brought out in the above balance of population therefore practically establishes the rate of increase of the whole population otherwise deduced. The calculation shows that if there is any error it is a slight under estimate of the rate of increase.

Rates of omission in the Birth and Death Returns for Males and Females separately.

To take now males and females separately we have the following facts :—

Fact.	Males.	Females.
Population on 1st May 1859 .	8,505,760	8,089,070
λr^{379}	0·0035451	0·0034987
λr^{365}	0·0034143	0·0033695
λr^{6}	0·0210394	0·0202354
$\lambda(r^{6}-1)$	$\bar{2}$·6955692	2·6785184
$\kappa\lambda r$	2·4555133	2·4724371
$\frac{d_{0/6}}{d_{0/105}}$	$\frac{21726}{61530}$ = ·35310	$\frac{20721}{61529}$ = ·33676
$\frac{d_{0/1}}{d_{0/6}}$	$\frac{14006}{21726}$; $\lambda = 1·8111976$	$\frac{13194}{20721}$; $\lambda = 1·7697355$
$\frac{d_{0/12}}{d_{0/105}}$	$\frac{2880}{61530}$; $\lambda = \bar{2}·6703611$	$\frac{3617}{61529}$; $\lambda = \bar{2}·7183651$
λP^{71}_{6}	5·6574612	5·6475268
$\lambda P^{71}_{0/6}$	6·5130674	6·5214822
$\lambda P^{71}_{0/105}$	7·1894783	7·1865610
$E_{0/6}$	4751	4688
$E_{0/105}$	107092	62989

Note.—In the above table E stands for the loss of population by emigration by sea between the 1st November 1870 and the 1st November 1876, *i.e.*, for the excess of emigrants over immigrants by sea in that period.

Hence we get the following logarithms of the rates of omission in the birth and death return :—

Ages	λ rate of omission.		Both Sexes.
	Males.	Females.	
	Births.		
	0 3338783	0·3432815	0 3379099
	Deaths.		
0 and under 1	0 3545163	0·3397870	0 3427514
1 „ 6 ..	0 1554287	0 2210569	0 1888065
6 „ 12 ...	0 1059004	0 2131428	0 1585826
Other ages	0 2347913	0 2797923	0 2568032
All ages	0 2409065	0 2766193	0 2583031

(4th) Calculation of the probability of living through the 1st, the 2nd, and the 3rd years of age.

The probability of life for the Madras Population in the first, second, and third year of age may be best obtained from the deaths out of the births. The deaths given in the returns are those occurring in each age period between two dates. Of the deaths returned in the age period 0 and under 1 in any year, no attempt is made to give the number occurring out of the births returned in that year ; for instance, a child aged one month on the 31st December 1871 dies on that date; his death is returned in 1871, and his death goes therefore against the births returned in 1871 ; but if he died one month old on the 1st January 1872, his death would be shown in the returns of 1872, though for the present purpose it should go against the births of 1871. For the present purpose it will be sufficient to estimate how many of the deaths in each month of life returned in any given year occurred out of the births returned in that year. The deaths occurring in the first month of life must all, with the exception of those in the first month of the year, occur out of the births returned in that year. Of those in the first month of life it may be assumed that as many deaths occur out of those born in the year in which the death is returned as in the former year. Of the deaths returned in the first month of life, therefore, half those occurring in the first month of the year, or one-twenty-fourth of those occurring in the whole year do not come out of the births returned in that year. Similarly three-twenty-fourths of those occurring in the second month of life, five-twenty-fourths of those in the third, and so on, do not come out of the births returned in that year. The number of deaths occurring in each month of life can be estimated by the method of differences from the deaths occurring in each year of age as ascertained in a table to be presently given. Deducting the number as above shown which do not occur out of those returned, the following table of those which do come out of the births returned in the same year is obtained :—

Age	Total Deaths returned in each year of Age.	Of the Deaths returned against the ages shown in Column 1, the number which come out of the births returned 1, 2, and 3 years previously.	λ Ratio of Columns 3 to 2
1	2	3	4
0 and under 1 ...	80,765	53,095	$\bar{1}$·8178304
1 „ 2 ...	18,452	10,257	$\bar{1}$·7449770
2 „ 3 ...	15,793	7,351	1·6678818

The deaths in the first year of age are distinguished in the Presidency returns, but only the total number in the period 1 and under 6 is given.

The statistics compiled by Mr. Gover above referred to unfortunately do not distinguish the sexes. They are for persons. But the ratio of the male to the female deaths can be obtained from the subsequent Madras Mortuary Returns, excluding the famine years. Using these data the ratio of the deaths in the age period 3 and under 6 to the whole number of deaths under 6 is for males $\frac{3423}{21726}$ and for females $\frac{3812}{20721}$; applying these ratios to the Presidency Returns for the like age period and distributing by the method of differences the sums for the age periods 1 and under 3, 3 and under 6, so obtained, the following table of deaths in the first six years is obtained .—

Year, from 1st Nov. to 1st Nov.	Age.											
	0 and under 1.		1 and under 2.		2 and under 3.		3 and under 4.		4 and under 5.		5 and under 6.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1870-71...	50,038	48,659	15,074	12,104	10,365	9,316	6,852	6,897	4,405	5,100	2,875	3,802
1871-72...	52,458	46,531	17,782	15,121	12,024	11,003	7,757	7,667	4,763	5,206	2,865	3,507
1872-73...	49,352	44,899	16,505	13,812	11,210	10,048	7,208	7,126	4,469	4,956	2,736	3,444
1873-74...	53,564	47,156	17,359	14,624	11,861	10,802	7,730	7,585	4,813	5,197	2,939	3,535
1874-75...	58,820	51,921	19,643	16,966	13,246	12,121	8,528	8,444	5,294	5,792	3,329	4,027
1875-76...	59,089	51,757	23,288	20,015	15,221	13,802	9,390	9,204	5,526	6,025	3,337	4,063
Total ...	323,321	290,923	109,651	92,642	73,927	67,092	47,465	46,923	29,270	32,276	18,081	22,378

I have given above on page vii the rates of omission in the death returns for the first year, for the age periods 1 and under 6, 6 and under 12, and other ages. These rates are those prevailing in the middle of each age period. Interpolating the logarithms of these rates the logarithms of the rates of omission in the deaths reported for the first six years are as shown below :—

Age.	λ Rates of omission in the deaths reported.	
	Males.	Females.
0 and under 1 ...	0·3545163	0·3397870
1 „ 2 ...	0·2713391	0·2837352
2 „ 3 ...	0·2055582	0·2451587
3 „ 4 ...	0·1554287	0·2210569
4 „ 5 ...	0·1318221	0·2152619
5 „ 6 ...	0·1148307	0·2114823

From the above considerations the following values of the probability of living through the first, second, and third years are obtained :—

Age. (x)	Logarithms of the probability of living one year after the age x.		Probability of living a year.		Probability of dying in a year.	
	λp_x.		p_x.		$\mu_x = 1 - p_x$.	
	Males.	Females.	Males.	Females.	Males.	Females.
0 and under 1 ...	$\bar{1}$·9139102	$\bar{1}$·9232442	·82019	·83800	·17981	·16200
1 „ 2 ...	$\bar{1}$·9705513	$\bar{1}$·9741486	·93444	·94221	·06556	·05779
2 „ 3 ...	$\bar{1}$·9814088	$\bar{1}$·9813473	·95810	·95796	·04190	·04204

The first three years of age in the life-table therefore are as under. The number of births assumed at 1,000,000 has been divided in the proportion which the corrected male births between 1st November 1870 and 1876 bear to the female births :—

Age. (x)	Males.			Females.		
	Dying in each year of age.	Born and living at each age.	Population or living in each year of age.	Dying in each year of age.	Born and living at each year of age.	Population or living in each year of age.
		Σd_x.	$\frac{1}{2}(l_x + l_{x+1}) = l_{x+1} + \frac{1}{2}d_x$		Σd_x.	$\frac{1}{2}(l_x + l_{x+1}) = l_{x+1} + \frac{1}{2}d_x$
	d_x.	l_x.	P_x.*	d_x.	l_x.	P_x.*
0	91,487	508,776	461,903	79,578	491,224	450,560
1	27,358	417,289	403,500	23,788	411,646	399,660
2	16,340	389,931	381,704	16,306	387,858	379,658
3	..	373,591	...	...	371,552	...

(5th) To correct the errors in regard to Age in the Census Returns of 1871.

The death-rate or rate of mortality involves three elements—time, the numbers living, and the numbers dying. It is the ratio of the area of the curve of the dying (or the total deaths) observed for a period of x units of time, included within given age limits, to the area of the curve of the living, or the years of life enjoyed by the population in the same period with reference to the same age limits. The expression fully written therefore is

$$m^{a\,b} = \frac{\Sigma d_x^{a/b}}{y_x^{a/b}}$$

where $\Sigma d_x^{a/b}$ is the total number of deaths occurring in x units of time between the ages (a) and (b) and m is the rate of mortality prevailing in each of the x units of time. The unit of time usually taken is a year, and the rate of mortality is then the mean annual rate of mortality.

Since $y_x^{a\,b} = x\,P^{a\,b}$ the above expression is identical with the following:—

$$m^{a/b} = \frac{d^{a/b}}{P^{a\,b}}$$

where $d^{a\,b}$ is the average number of deaths returned between the ages (a) and (b) in x years, and $P^{a/b}$ is the true mean of the population living at the beginning of the first and the end of each of (x) years.

* *Note.*—If P be the stationary population which would enjoy in a period of x years the years of life y_x, then $\frac{y_x}{x} = P$. "It is evident from the nature of the curve that $\frac{y_x}{x}$ represents the mean length of an infinite number of ordinates drawn at equi-distant points of the abscissa, and that while it is less than the arithmetic mean of the first and last ordinates of the series, it is greater than the geometrical mean proportional, that is, than the middle ordinate; so that the true mean population, which multiplied by x is equal to the years of life, is less than the mean of the populations living at the beginning and end, and more than the populations living in the middle of the period." (English Life-Table No. 3, p. xix). The error in the value of P will therefore be a minimum by taking the mean of these values, or if P_0 and P_1 be the population at the beginning and end of any one year and r be the rate of increase or decrease during the year, so that $P_1 = r\,P_0$, the years of life enjoyed during the year by the population P_0 in passing to $P_1 = y_1 = \frac{\frac{P_0 + P_1}{2} + r^{\frac{1}{2}} P_0}{2} = \frac{P_0 (r^{\frac{1}{2}} + 1)^2}{4}$

Now P_x = the years of life enjoyed in the year of age (x) by the living l_x

$$\therefore P_x = l_x \frac{(r^{\frac{1}{2}} + 1)^2}{4} \text{ where } r = \frac{l_x + 1}{l_x}$$

The value of P_x given in the column to which this note is referred was obtained by the above formula.

Again by equation B, if r be the annual rate of increase of the population

$$P^0_{0/1} + B_1 - D_1 - P^1_{0/1} = y_1 \text{ or since } P^1_{0/1} = r P^0_{0/1} \text{ and } y_1 = P^0_{0,1} \frac{(r^{\frac{1}{2}} + 1)^2}{4}$$

$$P^1_{0/1} = \frac{4r\,(B_1 - D_1)}{5r + 2r^{\frac{1}{2}} - 3}$$

or the formula given in the text on p. xi for finding the population at the end of the year ending on the 1st November 1871

In the present calculation the time (x) has been taken as the six years from the 1st November 1870 to the 1st November 1876. The total deaths within the several age periods have been determined by applying to the deaths as annually returned certain multipliers, which method leaves the law of the several parts of the curve unaltered throughout the time. To ascertain the true death-rate it remains therefore but to determine the value of the expression $y^{a'b}_{x} = xP^{a/b}$. This can be determined by equation D if the rate of increase (r) and the population at the beginning of the period $= P^{o}$ be known.

The rate of increase has already been determined, and it might be thought that the value of $P''_{a/b}$ could be obtained direct from the Census returns, but this is unfortunately not so owing to the large error in those returns. I proceed therefore to correct the Census returns. The result is embodied in the graduated table, Statement No. 3 appended.

The following is a statement of the numbers living in each age period in the Madras Presidency, exclusive of the State of Pudukóta, the Ganjam Maliahs, and Jeypore, as taken from the Census returns of 1871.

Age.	Males.	Females.
0 and under 5	2,804,448	2,878,470
5 „ 10	2,309,836	2,158,442
10 „ 15	1,427,973	1,160,410
15 „ 20	1,635,564	1,871,775
20 „ 25	1,298,923	1,389,668
25 „ 30	1,458,757	1,555,511
30 „ 35	827,893	706,126
35 „ 40	1,132,849	1,112,637
40 „ 45	517,394	430,140
45 „ 50	777,206	803,442
50 „ 55	278,706	238,486
55 „ 60	517,276	564,761
Above 60	482,755	501,129
Total ...	15,469,580	15,365,997

Note.—In the above statement 1,851 males and 2,353 females whose ages were returned as unknown have been distributed proportionately over all the age periods.

A mere glance at the above table is sufficient to show that it is full of errors.

The first error which it is necessary to notice is one common to both the male and female return, and is found in the Madras and the English Censuses, and in fact in some degree to all other Censuses. "It arises from the tendency to fix on the even numbers when there is any uncertainty as to the actual age." The uncertainty is very great in this country, and hence the error is great. The result is that a certain excess is thrown on the decennial years 20, 30, 40, &c. at the expense of the contiguous ages. Thus the numbers living between 15 and 20 are returned as numerically greater than those from 20 to 25, and so on. The effect of the above-mentioned tendency to error has been much obscured in the Madras Census of 1871 by the instructions given to the Enumerators. They were directed to return the age *next birthday*. Now any one estimating or stating his own or another's age will not naturally give his age *next birthday* but *last*.* The Enumerators in this country are not a class capable of grasping nice distinctions, and consequently the above rule was probably but little regarded by them. They consequently either stated or estimated the age as 20, 30 in the usual way, but of course when the returns were compiled the distinction was observed, and those persons returned as 20 for instance were classed as under 20, and fall in the period 15 and under 20. Since there is, as a rule, no wilful misrepresentation of age, the loss falls equally on the contiguous ages on both sides of the round age chosen. The error, therefore, will not affect the sums of the number of persons returned as living in each year between 15 and 25, 25 and 35, 35 and 45, &c. By graduating these sums by the method of differences, as has been done in Table No. 3 appended, and taking the sums of the numbers of persons living between 20—30, &c. from the graduated table, the error under discussion will be corrected.

There is another error in the Census return common to both the male and female return, viz., an under-statement of the ages of children under 15. To any one acquainted with natives

* Note.—In the discussion relative to the taking of the Census of 1871, I find it asserted that the natives of Southern India when asked give their age *next birthday*. This is not my experience, and is certainly not the habit of Canarese-speaking natives, with whose language and habits I am best acquainted. I have consulted some highly educated Tamil and Telugu speaking natives, who say it is not the habit of those populations either. I find no authority or reason given for the assertion first referred to. The idea perhaps arose from a misapprehension of the idiom of, I believe, all the Dravidian languages in regard to the use of the future tense. Put into Canarese and Tamil the English question "What is your age" is frequently "To you how many years will be," but the future tense is not then used to express futurity but merely to express doubt. The past tense is more abrupt and aggressive. The future as implying a doubt in the speaker's mind is more polite and is always used by the higher classes, but in this connection it no more expresses futurity than the word "may" in the English question "What may your age be" expresses potentiality.

this will cause no surprise. It is apparent when the numbers from 0 to 10 and 10 to 20 are compared with the numbers in the periods following. I graduated the sums of the living in the age periods 0 and under 6, 6 and under 12, 12 and under 20, and also 0 and under 5, 5 and under 15, 15 and under 20, and laid down the curves graphically, when the existence of this error appeared very markedly. I have corrected it in the following manner.

The number living in the first year on any date is given by the formula

$$P^1_{0,1} = \frac{4r\,(B_1 - D_1)^*}{5r + 2r^4 - 3}$$

where B_1 and D_1 are the additions to, and the decrement of, the population under one year of age in the previous year, and r is the rate of increase of the population during the same time. Now $B_1 = b$ (the births) and $D_1 = d_1 + E_1$; these particulars for the year between the 1st November 1870 and 1st November 1871 can be obtained from Statement No. 2-B appended, and r is known. From the corrected return of births and deaths between the 1st November 1870 and 1st November 1871 the number of males and females living in the first year of age on the 1st November 1871 can therefore be calculated. From this the population living on the 14th November 1871 can be obtained. From the latter and the P_x column of the life table as given above the probable number in the second year of age may be obtained. The number living in the sixth year of age is known from the Census returns. These particulars are shown in the appended statement.

Population on the 14th November 1871.

Age.	Males.	Females.
0 and under 1	587,102	564,765
1 „ 2	512,864	500,973
5 „ 6	454,424	444,147

Taking, therefore, the number living in the age period 1 and under 2, I drew the curve in graduated Table No. 3 by the method of differences through the number living in the sixth year, such that the sum of the numbers living in each year under 15 for males and under 25 for females should be equal to the number given in the 1871 Census returns as living under 15 and 25 respectively.

In the female series, as above said, the agreement is only with the sum of the numbers living under 25. In this series it is necessary to correct an over-statement of age in regard to females between 10 and 15 years, and consequent under-statement in the numbers returned from 10 to 15. This is due, it is probable, to the Enumerators estimating the ages of females of about 15 years of age with reference to their attaining puberty. The average age at which this takes place is probably the 16th year, but many females attain puberty at younger ages. All these the Enumerator would return as 16, and they would go to swell the numbers in the period from 15 to 20. This tendency to over-state the ages of females immediately above the age of puberty is found also in the death return, and will involve the correction of the death-rate in the age period from 12 to 30. The numbers of males and females returned as under 10 and from 10 to 20 are as follows:—

Age.	Males.	Females.
0 and under 10	5,114,284	5,036,912
10 „ 20	3,063,537	3,032,185

This comparison shows, therefore, that the large error noticeable in the sub-division of the period from 10 to 20 is merely an error in the sub-division itself. I have, therefore, assumed the males series as correct, and divided the sum of the number of females returned as living of 10 but under 15 years of age in the proportion of 1,427,973 to 1,635,564. The sums of the numbers of persons living under 15 is, therefore, for males 6,542,257 as enumerated, and for females 6,450,271 as calculated.

The 1871 Census returns do not distinguish the ages of the living above the age of 60. But in order to continue the graduated table beyond the 55th year, it was necessary to determine, as approximately as possible the numbers living in each decade of age over 55. I have therefore adopted the following method with that view.

* The proof of this formula is given in the note printed on p. ix.

The number living in each age period at the end of any given year may be calculated from the deaths in the previous year by the following formula :—

$$P^1_{a/b} = \frac{4r}{(r+1)^2} \cdot \frac{d_{a/b}}{m_{a/b}}$$

where r is the annual rate of increase of the population, $d_{a/b}$ is the total deaths occurring between the ages a and b in the previous year, and $m_{a/b}$ is the death-rate during the same period.

The death returns for the Presidency do not distinguish the ages at death above 60. But from the Madras City returns prepared by Mr. Gover for the years 1861 to 1870 inclusive the ages at death of persons for the age periods

55	and under	65
65	„	75
75	„	85
85	„	95
above		95

can be obtained. I therefore distributed the deaths of persons above 60 as returned for the Presidency between 1st November 1870 and 1st November 1871 in the proportion of the numbers as obtained from Mr. Gover's returns, and thus obtained the values of $d_{55/65}$, $d_{65/75}$, $d_{75/85}$, $d_{85/95}$, $d_{95/105}$ for persons required for the application of the above formula. In order to preserve the difference in the law of the deaths above 60 for males and females I distributed separately by the method of differences the deaths of males and females above 60 returned between 1st November 1870 and 1st November 1876. I divided the values of d for persons above given in the proportion which the sums of the male deaths between the corresponding age periods bore to the female deaths, and I corrected the resulting numbers so that this sum was equal to the total deaths above 60 as returned. I have given subsequently, on page xiv, the application of the above method to the calculation of the deaths in the age periods 60 and under 80 and above 80.

The value of $m_{a/b}$ for the required age periods was obtained by interpolation. The age periods above 20 for which deaths are returned in the Presidency returns are 20 and under 30, 30 and under 40, 40 and under 50, 50 and under 60, and above 60. The numbers in each period, taking the years from the 1st November 1870 to 1st November 1876, vary very slowly. By taking half the sum of the numbers returned for the period 20 and under 30 and half the sum of the numbers returned for the period 30 and under 40, the number for the period 25 to 35 is obtained with a very slight error. Similarly the error in the number for the period 35 and under 45, 45 and under 55, and above 55 is obtained with slight error. From these numbers the death-rate with reference to the corresponding population as given in the Census returns was calculated and the intervening terms interpolated.

Owing to the fact that the death-rate thus obtained is not the death-rate of 1871, but the mean annual death-rate derived from a series of years, the sum of the resulting numbers in each age period as calculated by the formula under discussion will not be the number living above 55 ; but since the correction necessary for the difference of the death-rate in 1871 from the normal death-rate is, under the circumstances of the case, constant for all the age periods in question, the total numbers of persons returned as above 55 years of age, distributed over each decade of age above 55 years proportionately to the sums of the numbers in each age period as above obtained, is the most probable estimate of the numbers living in each decade of age above 55 years on the 1st November 1871, which it is possible to obtain under the circumstances of the case.

The numbers given in the graduated table are the numbers living in each year of age at a given moment of time ; or if the population be supposed stationary, since $x = 1$ these numbers will be equal to the area of the curve of the living enclosed between the first and last ordinate in each year of age. These numbers are, therefore, the true mean population living throughout each year of age ; they are, therefore, practically the same as the P_x column of the life-table, and are the arithmetic mean of the numbers living at the beginning and end of each year of age. They will therefore be given by the expression $P_x = \frac{1}{2}(l_x + l_{x+1})$.

From the graduated table the law of the decrement of the population from all causes is obtained, but from a life-table the law of the decrement of the population from death alone.

I have throughout the present calculation adopted as fairly reliable the number given as living in the sixth year in the Census returns of 1871. It may be thought that this number is affected by the under-statement of the age of persons under 15 above dwelt on. It is so ; but, in my opinion, to a very slight degree. It will be seen that the curve calculated on the assumption of its correctness shows no sign of serious error. It is an age situated very nearly in the middle of the period in question, and therefore in that portion of the curve least affected by the error. The tabulation of the ages in 1871 was made in the form 0-5 | 5-6 | 6-10. The age in question, therefore, came between two sums, and since the tabulation of age was in 1871 a single tabulation, virtually unchecked, it is probable that by an error of tabulation more strokes relating to this single year fell into the larger periods on each side than of strokes belonging to those periods into it, and this error of tabulation has gone far to correct the error of return.

The comparison of the numbers living in the age periods shown below as taken from the Census returns, with the corrected results for the same periods as taken from the graduated Table No. 3, is made in the following statement :—

Ages	Males.			Females.		
	Uncorrected.	Corrected.	Excess or defect in the uncorrected as compared with the corrected numbers.	Uncorrected.	Corrected.	Excess or defect in the uncorrected as compared with the corrected numbers
0 and under 6	3,258,872	3,002,219	+ 256,653	3,322,630	2,921,692	+ 401,938
6 „ 12	2,550,430	2,463,357	+ 87,073	2,262,598	2,438,959	− 176,361
12 „ 20	2,368,519	2,646,277	− 277,758	2,483,892	2,702,647	− 218,755
20 „ 30	2,757,680	2,589,066	+ 168,614	2,944,182	2,619,719	+ 324,463
30 „ 40	1,960,742	1,960,255	+ 487	1,818,765	1,878,530	− 59,765
40 „ 50	1,294,600	1,366,757	− 72,157	1,233,583	1,289,887	− 56,304
50 „ 60	795,982	712,235	+ 83,747	798,218	720,806	+ 77,412
Above 60	482,755	729,414	− 246,659	501,129	793,757	− 292,628
	15,469,580	15,469,580		15,365,997	15,365,997	

Note.—The effect of the error in the age period 0 and under 6 above shown would be to reduce the rate of omission at all ages for deaths by 0·005 for males and for females by 0·037. Its effect on the calculation of $\lambda\, p_x$ would be inappreciable. I have not regarded this error, as it could not be corrected before the rate of omission was ascertained

This table shows that in the 1871 Census returns the numbers of the population shown as under the age of 30 is considerably in excess of what it should be. Indeed, the age of almost the whole population is considerably under-stated. It is apparent that this must be so, having regard to the nature of the error, to the method of returning the ages ordered in 1871, and to the fact that the direction then given probably was, and always would be to a large extent, disregarded.

(6*th*) *To determine the true Death-rate for the Madras Population.*

The death-rate is, as I have before stated, the ratio which the total deaths in a given period bear to the years of life out of which they may have occurred. In the following table of the death-rate the deaths are the deaths as returned from the 1st November 1870 to the 1st November 1876 corrected for omissions in the manner already explained. The years of life out of which they occurred have been calculated by the formula D given on page iv, the value of P^0 being taken from the graduated Table No. 3 appended and x being the six years to which the death returns relate. The number of deaths in the age period 1 and under 6 was obtained by applying the rate of correction for omission appropriate to each year of age to the number of deaths in that year as given in the table printed on page viii and totalling the numbers thus corrected.

I have said that the tendency to overstate the age of females above the age of puberty would need to be corrected in connection with the death-rate. That this tendency found in the Census returns would also be found in the death returns was certain, since the Enumerator and officer returning the deaths (the Village Monigar or Accountant) were the same in the vast majority of instances, and the age either for the Census returns or at death is either estimated by or best known to him I think further it is justifiable to assume, so vast is the preponderance of village officials among the enumerating staff, that this tendency is to be found in both returns in an equal degree. I have corrected the death-rate by dealing with the living in the age periods 12 and under 20, 20 and under 30, leaving the deaths as returned unaltered. By the method adopted the death-rate for the whole period from 12 to 30 remains unaltered. The death-rate at any other period is not affected.

The number of females in the age period 12 and under 30 shown in the Census returns is 5,428,335, viz., in the period 12 and under 20, 2,483,507, and in the period 20 and under 30, 2,944,728. The number of females living in the same period as obtained from the graduated table is 5,322,366. This divided in the proportion of the numbers taken from the Census returns gives the number of females living from 12 to 20 as 2,435,026, and from 20 to 30, 2,887,340. Adopting these latter numbers as the basis of the calculation of y_x with which the deaths should be compared, the values of $m_{12/20}$ and $m_{20\,30}$ shown below are obtained, and have been adopted as in my judgment the most correct.

The death-rate for the age periods 60 and under 80 and above 80 has been obtained as follows.

From the returns prepared by Mr. Gover interpolated by the method of differences the deaths of persons reduced to 100,000 are—

Age.	Deaths.
60 and under 80	66,602
Above 80	33,398
	100,000

From the series obtained by distributing by the method of differences the sum of the deaths above 60 returned from the 1st November 1870 to 1st November 1876 reduced to 100,000 for both males and females, the deaths are —

Age.	Males.	Females.	Total.
60 and under 80	87,414	84,202	171,616
Above 80	12,586	15,798	28,384
	100,000	100,000	200,000

Applying the ratio of male to female deaths derived from the latter series to the deaths of 100,000 persons as first given above, the following division of the deaths above 60 is obtained :—

Age.	Males.	Females.	Total.
60 and under 80	33,924	32,678	66,602
Above 80	14,809	18,589	33,398
	48,733	51,267	100,000

The total number of male deaths returned from the 1st November 1870 to 1st November 1876 is 305,048, and of female deaths in the same years 304,387. If these sums be divided in the proportion of $\frac{33924}{48733}$ and $\frac{14809}{48733}$ for males, and in the proportion of $\frac{32678}{51267}$ and $\frac{18589}{51267}$ for females, and to the resulting numbers the correction for omission for males and females be applied, the logarithms of the deaths for the age periods 60 and under 80 and above 80 as given in the statement of the mean annual death-rate will be obtained.

The year of age to which the death-rate as above obtained for the age period above 80 must be assigned depends on the limit of life adopted. I have taken this limit at 105 years for both males and females because I could, when on my tours of inspection I instituted inquiries as to the greatest age recorded, get no information even fairly reliable of any age above that number, though higher ages were recorded, and because the sum of the deaths above 95 recorded by Mr. Gover would indicate that limit.

Table showing the logarithms of the (1) *years of life,* (2) *deaths, and* (3) *mean annual rate of mortality of males and females in the Madras Presidency at different ages in the six years from 1st November* 1870 *to 1st November* 1876.

Age.	λy_x.		λd_x.		λm_x.	
	Males.	Females.	Males.	Females.	Males.	Females.
0 and under 1 ...	6·5539427	6·5871088	5·8641493	5·8035651	$\bar{1}$·3102066	$\bar{1}$·2664563
1 „ 6 ...	7·1681673	7·1575873	5·6576085	5·6660489	$\bar{2}$·4894412	$\bar{2}$·5084616
6 „ 12 ...	7·1767564	7·1724456	5·1754134	5·2148752	$\bar{3}$·9986570	$\bar{2}$·0424296
12 „ 20 ...	7·2078644	7·1717447	5·2424239	5·3133267	$\bar{2}$·0345595	$\bar{2}$·1415820
20 „ 30 .	7·1983722	7·2457246	5·4615046	5·5431159	$\bar{2}$·2631324	$\bar{2}$·2973913
30 „ 40 .	7·0775417	7·0590592	5·4827621	5·4314350	$\bar{2}$·4052204	$\bar{2}$·3723758
40 „ 50 ...	6·9209205	6·8957927	5·4859281	5·3686794	$\bar{2}$·5650076	$\bar{2}$·4728867
50 „ 60 ...	6·6378524	6·6430595	5·5073647	5·4447189	$\bar{2}$·8695123	$\bar{2}$·8016594
60 „ 80 ...	6·5388466	6·5683905	5·5618445	5·5676223	$\bar{1}$·0229979	$\bar{2}$·9992318
Above 80	6·9957421	6·0566458	5·2018757	5·3226213	$\bar{1}$·2061436	$\bar{1}$·2659755
All ages	7·9747077	7·9718019	6·5050523	6·4965101	$\bar{2}$·5303446	$\bar{2}$·5247082

The mean birth and death rate per mille per annum for males, females and both sexes for all ages is as shown below :—

Per mille per annum.	Males.	Females.	Persons.
Birth-rate	43·11	41·90	42·45
Death-rate	33·91	33·47	33·70

Calculation of the probability of living through one year after any age x deduced from the death-rate.

The following method of calculating the probability of living through a year after any age (x) is taken from Dr. Farr's English Life-Table No. 3, page xxiii :—

"Let m = the annual rate of mortality at the precise age (x). The mortality at the age 25 = m is represented by the mortality ruling from 24½ to 25½. Put r = the rate at which the *rate of mortality increases* or decreases, then

$$\lambda p_x = \frac{k^2 m}{\lambda r}(1 - r)"$$

NOTE.—If r be greater than 1, i.e., if the rate of mortality be increasing, then the right hand side of the equation is a *minus* quantity. Changing its sign the value of—λp_x is obtained or the complement of λp_x.

"Here k is the modulus of the common logarithm and λr is the common logarithm of r, while p_x is the probability of living through a year after the age x and λp_x is its common logarithm; κ (λr) is the complement of the logarithm of (λr). If the operation be by logarithms

$$\lambda(\lambda p_x) = \lambda k^2 + \lambda m + \kappa(\lambda r) + \lambda(1 - r) \quad \ldots \quad \ldots \quad \text{I.}$$

from which the logarithm of p_x and p_x itself are immediately found.

Example.—Females; age 25

λk^2	$= \bar{1}\cdot2755686.$
λm	$= \bar{2}\cdot2973913.$
$\kappa(\lambda r)$	$= 1\cdot9299926.$
$\lambda(1 - r)$	$= \bar{2}\cdot4381150.$
$\lambda(-\lambda p_x)$	$= \bar{3}\,9410675.$
$-\lambda p_x$	$= 0\,0087310.$
λp_x	$= 1\cdot9912680.$

"In some cases the following formula is applicable :—

$$p_x = \frac{1 - \frac{1}{2}m}{1 + \frac{1}{2}m} = \frac{2 - m}{2 + m} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{J.}$$

and when m is a small quantity the resulting value of p_x is nearly identical with that obtained by the other method."

The values given in the following statement of λp_0, λp_1, λp_2 were obtained from the deaths out of the births. That of λp_{12} from formula J. The values of λp_4, λp_9, λp_{16}, λp_{25}, &c., were obtained by formula I.

"In the annexed table the age x is the precise age. Age 12 is applied frequently to all persons of the age of 12 and under 13, but in this table it applies to persons of the precise age of 12 years, neither more nor less."

Table of the **several values** of λp_x on which the NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY is based; also the corresponding values of p_x and of $1 - p_x$.

Age.	Logarithms of the probability of living one year after any age (x).		Probability of living a year.		Probability of dying in a year.	
	λp_x		p_x.		$\mu_x = 1 - p_x$.	
	Males.	Females.	Males.	Females.	Males.	Females.
0	$\bar{1}\cdot9139102$	$\bar{1}\,9232442$	·82019	·83800	·17981	·16200
1	$\bar{1}\,9705513$	$\bar{1}\,9741486$	·93444	·94221	06556	·05779
2	$\bar{1}\,9814088$	$\bar{1}\,9813473$	·95810	·95796	·04190	·04204
4	$\bar{1}\,9866354$	$\bar{1}\,9860480$	·96970	·96838	·03030	·03162
9	$\bar{1}\,9954570$	$\bar{1}\,9950007$	·98959	98855	·01041	·01145
12	$\bar{1}\,9963236$	$\bar{1}\cdot9958886$	·99157	·99058	·00843	·00942
16	$\bar{1}\,9951279$	$\bar{1}\,9937772$	98884	·98577	·01116	·01423
25	$\bar{1}\,9918746$	$\bar{1}\cdot9912680$	98146	·98009	·01854	·01991
35	$\bar{1}\,9987949$	$\bar{1}\,9896893$	·97453	·97654	·02547	·02346
45	$\bar{1}\,9835441$	$\bar{1}\,9867103$	·96282	·96986	·03718	·03014
55	$\bar{1}\,9669160$	$\bar{1}\,9715810$	·92665	93666	·07335	·06334
65	$\bar{1}\,9566683$	$\bar{1}\,9602243$	·90504	·91248	·09496	·08752
75	$\bar{1}\,9520976$	$\bar{1}\,9526641$	·89557	·89673	10443	·10327
85	$\bar{1}\,9449848$	$\bar{1}\,9408270$	·88102	·87202	·11898	12738
95	$\bar{1}\cdot9155583$	$\bar{1}\,8949238$	82330	·78510	·17670	·21490
105	$\bar{1}\,5063559$	$\bar{1}\,5196334$	·32089	33085	·67911	·66915

Calculation of l_x.

When the logarithms of the probability for the years specified were obtained as above, the values of the probability for the intervening years were obtained by interpolation with the exception of λp_{50}, which was obtained from the interpolated death-rate by the formula 1. In the interpolation of the series both for males and females four orders of differences (the fourth constant) were used. Both the male and female series were for the purposes of interpolation divided into four sub-series, namely, the first from λp_2 to λp_{16}; the second from λp_{16} to λp_{50}; the third from λp_{50} to λp_{95}; and the fourth λp_{95} to the end of the series.

The basis of the life-table for persons is 1,000,000 births. If 1,000,000 be divided in the proportion which the corrected mean annual male births as given in the Presidency returns between 1st November 1870 and 1st November 1876 bear to the female births, the resulting numbers are 508,776 male births and 491,224 female. These numbers have therefore been taken as the basis of the male and female life-tables. In both series the l_x column has been constructed by adding to the logarithms of l_x the logarithm of the appropriate probability (λp_x) thus:—

$$\lambda p_x = \lambda l_{x+1} - \lambda l_x.$$

Interpolation.

In interpolation and in the distribution of the sums of successive terms into the terms of which they consist the following formulæ were used. It is usual to use formulæ like these to interpolate the terms for the interval between u_o and u_x only unless the series be one of which the order of differences assumed constant is as a fact constant.

First.—Assume the third order of differences constant, and (1) suppose the intervals between the given points of the curve are unequal.

Problem (1). To find the first of each order of differences δ^1_o, δ^2_o, δ^3_o, (the latter constant) for interpolating a series of $z + 1$ equi-distant terms of which any four terms $u_o\ u_x\ u_y\ u_z$ are given.

Let $A_1 = \frac{u_x - u_o}{x}$, $\quad B_1 = \frac{u_y - u_o}{y}$, $\quad C_1 = \frac{u_z - u_o}{z}$

Then the formulæ are

$$\delta^3 = \frac{6\left\{(y-x)\,C_1 - (z-x)\,B_1 + (z-y)\,A_1\right\}}{(y-x)\left\{(z-1)(z-2)-(y-1)(y-2)\right\} - (z-y)\left\{(y-1)(y-2)-(x-1)(x-2)\right\}}$$

$$\delta^2 = \frac{2}{(y-x)}\left\{B_1 - A_1 - \left\{(y-1)(y-2) - (x-1)(x-2)\right\}\frac{\delta^3}{6}\right\}$$

$$\delta^1 = A_1 - (x-1)\frac{\delta^2}{2} - (x-1)(x-2)\frac{\delta^3}{6}$$

(See English Life-table No. 3, p. xxv.)

Problem (2). To find the first of each order of differences δ^1_o, δ^2_o, δ^3_o, (the latter constant) for calculating a series of z terms, of which the first term u_o and the sums of x, y, and z terms are given.

Let Σ_x, Σ_y, Σ_z be the sums of x, y, and z terms, respectively, *from and inclusive of* u_o. Also let

$$A_1 = \frac{2\,(\Sigma_x - xu_o)}{x\,(x-1)}, \quad B_1 = \frac{2\,(\Sigma_y - yu_o)}{y\,(y-1)}, \quad C_1 = \frac{2\,\Sigma_z - zu_o)}{z\,(z-1)},$$

Then the formulæ are

$$\delta^3 = \frac{12\left\{(y-x)\,C_1 - (z-x)\,B_1 + (z-y)\,A_1\right\}}{(y-x)\left\{(z-2)(z-3)-(y-2)(y-3)\right\} - (z-y)\left\{(y-2)(y-3)-(x-2)(x-3)\right\}}$$

$$\delta^2 = \frac{3}{(y-x)}\left\{B_1 - A_1 - \left\{(y-2)(y-3) - (x-2)(x-3)\right\}\frac{\delta^3}{12}\right\}$$

$$\delta^1 = A_1 - (x-2)\frac{\delta^2}{3} - (x-2)(x-3)\frac{\delta^3}{12}.$$

(2) Suppose the intervals between the given points on the curve equal Then $y = 2x$ $z = 3x$. Substituting these values for y and z in the formulæ above given for the interpolation of terms they become (see English Lite-Table No. 3, p xxv).

$$\delta^3 = \frac{u_{3x} - 3u_{2x} + 3u_x - u_o}{x^3}$$

$$\delta^2 = \frac{u_{2x} - 2u_x + u_o}{x^2} - (x-1)\,\delta^3$$

$$\delta^1 = \frac{u_x - u_o}{x} - \frac{(x-1)}{2}\,\delta^2 - \frac{(x-1)(x-2)}{2\ 3}\,\delta^3$$

Making a similar substitution in the formulæ for the distribution of sums the following are obtained —

$$\delta^3 = \frac{6\left\{C_1 - 2B_1 + A_1\right\}}{x^2}$$

$$\delta^2 = \frac{3(B_1 - A_1)}{x} - \frac{3x-5}{4}\,\delta^3$$

$$\delta^1 = A_1 - \frac{(x-2)}{3}\,\delta^2 - \frac{(x-2)(x-3)}{3\ 4}\,\delta^3$$

Secondly.—Assume the fourth order of differences constant, and (1) suppose the intervals between the given points on the curve unequal.

Problem (1.) To find the first of each order of differences δ_o^1, δ_o^2, δ_o^3, δ_o^4, (the latter constant) for interpolating a series of $(z+1)$ equi-distant terms of which any five terms u_o, u_x, u_y, u_z, and u_n are given.

Let
$$A_1 = \frac{u_x - u_o}{x}$$
$$B_1 = \frac{u_y - u_o}{y}$$
$$C_1 = \frac{u_z - u_o}{z}$$
$$D_1 = \frac{u_n - u_o}{n}$$

Again let
$$A_2 = \frac{B_1 - A_1}{y - x}$$
$$B_2 = \frac{C_1 - B_1}{z - y}$$
$$C_2 = \frac{D_1 - C_1}{n - z}$$

Let
$$A_3 = \frac{B_2 - A_2}{z - x}$$
$$B_3 = \frac{C_2 - B_2}{n - y}$$

Let
$$A_4 = \frac{B_3 - A_3}{n - x}$$

Then the formulæ are

$$\delta^4 = 24A_4$$

$$\delta^3 = 6A_3 - \frac{z + y + x - 6}{4}\,\delta^4$$

$$\delta^2 = 2A_2 - \frac{y + x - 3}{3}\,\delta^3 - \frac{3x(x-4) + (y-x)(y + 2x - 6) + 11}{12}\,\delta^4$$

$$\delta^1 = A_1 - \frac{(x-1)}{2}\,\delta^2 - \frac{(x-1)(x-2)}{2\ 3}\,\delta^3 - \frac{(x-1)(x-2)(x-3)}{2\ 3\ 4}\,\delta^4$$

Problem (2) To find the first of each order of differences δ_o^1, δ_o^2, δ_o^3, δ_o^4, (the latter constant) for calculating a series of n terms of which the first term u_o and the sums of x, y, z, and n terms are given. Let Σ_x, Σ_y, Σ_z, and Σ_n be respectively the sums of x, y, z, and n terms from and inclusive of u_o—

Let
$$A_1 = \frac{2(\Sigma_x - xu_o)}{x(x-1)}$$
$$B_1 = \frac{2(\Sigma_y - yu_o)}{y(y-1)}$$
$$C_1 = \frac{2(\Sigma_z - zu_o)}{z(z-1)}$$
$$D_1 = \frac{2(\Sigma_n - nu_o)}{n(n-1)}$$

Let
$$A_2 = \frac{B_1 - A_1}{y - x}$$
$$B_2 = \frac{C_1 - B_1}{z - y}$$
$$C_2 = \frac{D_1 - C_1}{n - z}$$

Let
$$A_3 = \frac{B_2 - A_2}{z - x}$$
$$B_3 = \frac{C_2 - B_2}{n - y}$$

Let
$$A_4 = \frac{B_3 - A_3}{n - x}$$

Then the formulæ are

$$\delta^4 = 60A_4$$

$$\delta^3 = 12A_3 - \frac{z + y + x - 9}{5}\,\delta^4$$

$$\delta^2 = 3A_2 - \frac{y + x - 5}{4}\,\delta^3 - \frac{3x(x-6) + (y-x)(y + 2x - 9) + 26}{20}\,\delta^4$$

$$\delta^1 = A_1 - \frac{(x-2)}{3}\,\delta^2 - \frac{(x-2)(x-3)}{3\ 4}\,\delta^3 - \frac{(x-2)(x-3)(x-4)}{3\ 4\ 5}\,\delta^4$$

(2.) Suppose the intervals between the given points of the curve equal. Then $y = 2x$, $z = 3x$, and $n = 4x$.

The formulæ for the distribution of the sums admit practically of no important simplification, but those for the interpolation of the terms admit of a very important modification.

Take out the differences of the original terms and the differences of those differences up to the last order of differences to be retained.

Thus let—

$$\Delta_1 = u_x - u_0, \qquad \Delta'_1 = u_{2x} - u_x, \qquad \Delta''_1 = u_{3x} - u_{2x}, \qquad \Delta'''_1 = u_{4x} - u_{3x},$$

Let

$$\Delta_2 = \Delta'_1 - \Delta_1, \qquad \Delta'_2 = \Delta''_1 - \Delta'_1, \qquad \Delta''_2 = \Delta'''_1 - \Delta''_1,$$

Let

$$\Delta_3 = \Delta'_2 - \Delta_2, \qquad \Delta'_3 = \Delta''_2 - \Delta'_2,$$

Let

$$\Delta_4 = \Delta'_3 - \Delta_3.$$

Then $A_1 = \frac{\Delta_1}{x}$, $A_2 = \frac{\Delta_2}{2x^2}$, $A_3 = \frac{\Delta_3}{6x^3}$, $A_4 = \frac{\Delta_4}{24x^4}$.

Written therefore in terms of the differences of the original terms and their differences the formulæ for finding the first of the four orders of differences for the interpolation of $(n + 1)$ terms become—

$$\delta^4 = \frac{\Delta_4}{x^4}.$$

$$\delta^3 = \frac{\Delta_3}{x^3} - \frac{3\ (x-1)}{2}\ \frac{\Delta_4}{x^4}.$$

$$\delta^2 = \frac{\Delta_2}{x^2} - (x-1)\ \frac{\Delta_3}{x^3} + \frac{(11\ x^2 - 18\ x + 7)}{12}\ \frac{\Delta_4}{x^4}.$$

$$\delta^1 = \frac{\Delta^1}{x} - \frac{(x-1)}{2}\ \frac{\Delta_2}{x^2} + \frac{(2\ x^2 - 3\ x + 1)}{6}\ \frac{\Delta_3}{x^3} - \frac{(6\ x^3 - 11\ x^2 + 6\ x - 1)}{24}\ \frac{\Delta_4}{x^4}.$$

These are the equations given by Dr. Farr on p. xxvi of the English Life-table No. 3 as the "General equations for finding the smaller differences δ from the greater ones Δ when the interval from term to term is unity."

In the formulæ given above for distributing the successive sums of x, y &c. terms into the terms of which they consist, I have assumed the first term u_0 given. If u_0 be not given the following process should be resorted to. By it the general equations required can be deduced, but the case occurs so seldom I have not deduced the general expressions.

By the fundamental formula—

$$\Sigma_n = nu_0 + \frac{n\ (n-1)}{1\quad 2}\ \delta^1 + \frac{n\ (n-1)(n-2)}{1\quad 2\quad 3}\delta^2 + \&c.$$

Write down in order the equations for Σ_x, Σ_y, Σ_z, &c., putting in the values of $\frac{x\ (x-1)}{1\quad 2}$ &c. from a table of Binomial co-efficients. Make the co-efficients of u_0 the same in all the equations and subtract downwards the resulting equation for Σ_x from that for Σ_y, that for Σ_y from that for Σ_z, and so on. u_0 will be thus eliminated. Similarly eliminate δ^1, δ^2, δ^3, &c., until the last order of differences δ^a is reached. Solve for δ^a. In the *first* of the equations involving δ^a and δ^{a-1} put the value of δ^a and solve for δ^{a-1}. In the *first* of the equations involving δ^a, δ^{a-1}, δ^{a-2} put the values as above found of δ^a, δ^{a-1}, and solve for δ^{a-2} and so on until u_0 is reached. The values of u_0, δ^1, δ^2, &c., δ^a will interpolate the terms of which Σ_x is composed.

When the number of terms comprised in the successive sums Σ_x, Σ_y, Σ_z, &c., is equal, *i.e.*, when $y = 2x$, $z = 3x$, &c., the following process will give less work :—

Write down the values of the co-efficients of u_0, δ^1, δ^2, &c., from a table of Binomial co-efficients, thus :—

	u_0	δ^1	δ^2	δ^3	&c.
(1.)	x	$\frac{x(x-1)}{1\quad 2}$	$\frac{x(x-1)\ (x-2)}{1\quad 2\quad 3}$	&c.	
(2.)	y	$\frac{y(y-1)}{1\quad 2}$	$\frac{y(y-1)\ (y-2)}{1\quad 2\quad 3}$	&c.	
(3.)	z	&c.	&c.	&c.	

Subtract the values of the co-efficients in (1) from those in (2), those in (2) from those in (3), and so on and let them be—

u_o	δ^1	δ^2	δ^3
y'	y''	y'''	y^{iv} &c.
z'	z''	z'''	z^{iv} &c.
&c.	&c.	&c.	&c

then—

$$\Sigma_x = x\,u_o + \frac{x(x-1)}{1\ 2}\delta^1 + \frac{x(x-1)(x-2)}{1\ 2\ 3}\delta^2 + \frac{x(x-1)(x-2)(x-3)}{1\ 2\ 3\ 4}\delta^3 + \&c.$$

$$\Sigma_y - \Sigma_x = y'\,u_o + y''\,\delta^1 + y'''\,\delta^2 + y^{iv}\,\delta^3\ \&c.$$

$$\Sigma_z - \Sigma_y = z'\,u_o + z'''\,\delta^1 + z^{iv}\,\delta^2 + z^{v}\,\delta^3\ \&c.$$

It will be found that by the above process, very easily done in practice, the necessity for making the co-efficients of u_o, &c., the same in all the equations has been avoided. The unknown quantities u_o, δ^1, δ^2, &c., should be eliminated and their values obtained exactly as in the manner already stated above when the intervals between the terms were unequal.

The method last above given is equally applicable whether the number of terms comprised in the successive sums is the same or not, but its use is of no advantage except when the number is the same.*

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* The above rule was deduced as follows :—

Let $\Sigma_k\ \Sigma_l\ \Sigma_m$ &c be the sums successively of k, l, m, &c, terms of an equi-distant series, the law of which is continuous throughout the whole series, and let $u_o\ u'_o\ u''_o$ &c be the first term comprised in $\Sigma_k\ \Sigma_l\ \Sigma_m$ respectively. u'_o is the kth term from and exclusive of u_o; u''_o is the $(k+l)^{th}$ term from and exclusive of u_o, and so on.

Then—

$$\Sigma_k = ku_o + \frac{k(k-1)}{1\ 2}\Delta u_o + \frac{k(k-1)(k-2)}{1\ 2\ 3}\Delta^2 u_o + \&c. \quad \ldots\ (1)$$

$$\Sigma_l = lu'_o + \frac{l(l-1)}{1\ 2}\Delta u'_o + \frac{l(l-1)(l-2)}{1\ 2\ 3}\Delta^2 u'_o + \&c \quad \ldots\ (2)$$

$$u'_o = u_o + k\,\Delta\,u_o + \frac{k(k-1)}{1\ 2}\Delta^2 u_o + \&c \quad \ldots\ (3)$$

In the latter equation change k into $(k+1)$.

Then—

$$u'_o + \Delta u'_o = u_o + (k+1)\,\Delta u_o + \frac{(k+1)k}{1\ 2}\Delta^2 u_o + \&c \quad \ldots\ (4)$$

Subtract 3 from 4

Then—

$$\Delta u'_o = \Delta u_o + k\,\Delta^2 u_o + \frac{k(k-1)}{1\ 2}\Delta^3 u_o + \&c \quad \ldots\ (5)$$

Again in (3) change k into $(k+2)$.

Then—

$$u_o + 2\,\Delta u'_o + \Delta^2 u'_o = u_o + (k+2)\,\Delta u_o + \frac{(k+2)(k+1)}{1\ 2}\Delta^2 u_o + \&c \quad \ldots\ (6)$$

Subtract 4 from 6

Then—

$$\Delta u'_o + \Delta^2 u'_o = \Delta u_o + (k+1)\,\Delta^2 u_o + \frac{(k+1)k}{1\ 2}\Delta^3 u_o + \&c \quad \ldots\ (7)$$

Substituting in 7 the value of $\Delta u'_o$ obtained from (5)

$$\Delta^2 u'_o = \Delta^2 u_o + k\,\Delta^3 u_o + \frac{k(k-1)}{1\ 2}\Delta^4 u_o + \&c.$$

Similarly

$$\Delta^n u'_o = \Delta^n u_o + k\,\Delta^{n+1} u_o + \frac{k(k-1)}{1\ 2}\Delta^{n+2} u_o + \&c$$

Suppose $\Delta^n u_o$ constant, then $\Delta^{n+1} u_o$ &c $= 0$ and $\Delta^n u'_o = \Delta^n u_o$.

Substituting these values in (2)

$$\Sigma_l = l\left\{u_o + k\,\Delta u_o + \frac{k(k-1)}{1\ 2}\Delta^2 u_o + \&c \ \ldots\ + \frac{k(k-1)\ldots(k-n+1)}{\lfloor n}\Delta^n u_o\right\}$$
$$+ \frac{l(l-1)}{1\ 2}\left\{\Delta u_o + k\,\Delta^2 u_o + \&c \ \ldots\ + \frac{k(k-1)\ldots(k-n+2)}{\lfloor n-1}\Delta^n u_o\right\}$$
$$+ \frac{l(l-1)(l-2)}{1\ 2\ 3}\left\{\Delta^2 u_o + k\,\Delta^3 u_o + \&c \ \ldots\ + \frac{k(k-1)\ldots(k-n+3)}{\lfloor (n-2)}\Delta^n u_o\right\}$$
$$+ \ldots\ldots$$
$$+ \frac{l(l-1)\ldots(l-n)}{\lfloor n+1}\Delta^n u_o$$

Explanation of the tables.

The male and female life-tables were constructed independently, that of persons was obtained by combining the other two.

The following formulæ and explanations of the life-tables are founded upon, or taken from Dr. Farr's English Life-Table No. 3, to which reference should be made for the proofs, &c., of the formulæ.

The column d_x expresses the deaths which accrue in the years after the ages x; the number in the column is derived from l_0 with which it is connected by the law of mortality prevailing at the age x and in all the preceding ages.

The column l_x is the sum of column d_x added up from the bottom; so d_x is always the difference of l_x and l_{x+1}. Thus

$$d_x = l_x - l_{x+1} \text{ and } l_{x+1} + d_x = l_x.$$

L_x is the sum of the series l_x and $L_x = l_x + l_{x+1}$.

P_x is usually taken to represent the tabular population living at the age x and under $x+1$. P_x is also the years of life enjoyed by the living at the age x (l_x) in passing to the age $x+1$. It is generally taken as the arithmetic mean of the numbers living at the ages x and $x+1$, that is—

$$P_x = \frac{l_x + l_{x+1}}{2} = l_{x+1} + \tfrac{1}{2} d_x .$$

In the present tables the P_x column has been calculated by the above formulæ after the tenth year. Before the tenth year it has been calculated by the formula

$$P_x = \frac{(r^{\frac{1}{2}} + 1)^2}{4} l_{x+1} \text{ where } r = \frac{l_x}{l_{x+1}}.$$

P_x is correctly that number which multiplied by unity is equal to the area of the curve of the living enclosed between the ordinates l_x and l_{x+1}; this number must always lie between the arithmetic mean of the ordinates and the middle ordinate, *i.e.*, between $\frac{l_x + l_{x+1}}{2}$ and $r^{\frac{1}{2}} l_{x+1}$; when the series d_x is varying slowly the number as defined above will differ but little from $\frac{l_x + l_{x+1}}{2}$, but when the series is varying rapidly as in the first ten years of life the difference is greater, but never considerable. No error of any consequence will result from taking $P_x = \frac{l_x + l_{x+1}}{2}$ to represent generally the numbers living through the years of age following x.

Q_x is the sum of the column P_x and in all cases $Q_x = P_x + Q_{x+1}$ and $P_x = Q_x - Q_{x+1}$. The column represents to the basis of the table (1) the tabular numbers living of every age (x)

Collecting the terms involving—

u_0 Δu_0 $\Delta^2 u_0$ &c.

$$\Sigma_l = l\, u_0$$
$$+ \Delta u_0 \left\{ \frac{l\,(l-1)}{1\ 2} + \tilde{l}\, k \right\}$$
$$+ \Delta^2 u_0 \left\{ \frac{l\,(l-1)\,(l-2)}{1\ 2\ 3} + \frac{l\,(l-1)}{1\ 2} k + l \frac{k\,(k-1)}{1\ 2} \right\}$$
$$+ \Delta^3 u_0 \left\{ \frac{l\,(l-1)\,(l-2)\,(l-3)}{1\ 2\ 3\ 4} + \frac{l\,(l-1)\,(l-2)}{1\ 2\ 3} k + \frac{l\,(l-1)}{1\ 2} \frac{k\,(k-1)}{1\ 2} + l \frac{k\,(k-1)\,(k-2)}{1\ 2\ 3} \right\}$$
$$+ \text{ \&c.}$$
$$+ \Delta^n u_0 \left\{ \frac{l\,(l-1)\,(l-2) \ldots\ldots (l-n)}{\lfloor n+1} \ldots\ldots + l \frac{k\,(k-1) \ldots\ldots (k-n+1)}{\lfloor n} \right\}$$

In the above process the expression for the second sum has been deduced in terms of the first term and differences of the first sum, and since in the above process no restriction has been placed on the numerical value of k or l, k may be supposed equal to $k+l$ and l to m, and the expression for Σ_m may be at once written down in terms of $k+l$ and m. But it will be found that the co-efficient of Δu_0

$$= \frac{(k+l)\ (k+l-1)}{1\ 2} - \frac{k\ (k-1)}{1\ 2}$$

and that of $\Delta^2 u_0$

$$= \frac{(k+l)\ (k+l-1)\ (k+l-2)}{1\ 2\ 3} - \frac{k\,(k-1)\ (k-2)}{1\ 2\ 3}$$

&c.

From this the rule in the text at once follows since $n = k$, $y = k+l$, $z = k+l+m$, &c.

and upwards; also since $Q_x = \Sigma P_x$ to the end of the table (2) Q_x = the number of *years of life* which the l_x persons *will enjoy*.

$\therefore \frac{l_x + l_{x+1}}{2}$ persons $= P_x$ will enjoy $\frac{Q_x + Q_{x+1}}{2}$ years of life.

$$Y_x = \Sigma \frac{Q_x + Q_{x+1}}{2} = Y_{x+1} + Q_{x+1} + \tfrac{1}{2}P_x$$

$\therefore$ since $Q_x = \Sigma P_x$, Y_x is the number of *years of life* which the Q_x persons *will enjoy*.

Again, the mean age of the population living between the ages x and $x + 1$, $= P_x$, is $x + \frac{1}{2}$. The mean number of years which each member of the population has lived over x is $\frac{1}{2}$ and the number of years which all have lived over x is $\frac{1}{2}P_x$. Similarly the number of years lived over x by the population between the ages $x + 1$ and $x + 2$, $= P_{x+1}$, is $1\frac{1}{2}\ P_{x+1}$; and by the population between the ages $x + n$ and $x + n + 1$, $= P_{x+n}$, is $(n + \frac{1}{2})\ P_{x+n}$. The number of years lived over x by the population Q_x is therefore $= \frac{1}{2}P_x + 1\frac{1}{2}P_{x+1} +$ &c. to the end of the table.

Now $Y_x = \Sigma\frac{1}{2}(Q_x + Q_{x+1}) = \frac{1}{2}Q_x + Q_{x+1} +$ &c. to the end of the table, $= \frac{1}{2}P_x + 1\frac{1}{2}P_{x+1} +$ &c. to the end of the table, as will appear if Q_x be written in terms of P_x.

Y_x therefore is also the *number of years* which the persons Q_x, or the population of the age x and upwards, *have lived over* x.

The *annual rate of mortality* $= \frac{d_x}{P_x} = m_x$ was calculated and 100 m_x or the mortality per cent. is printed. The reciprocal $\frac{P_x}{d_x}$ gives the number of persons living of the age x to one death annually. Since $l_x = \Sigma d_x$, and $Q_x = \Sigma P_x$, $\frac{Q_x}{l_x}$ = the number of persons living of the age x and upwards to one death annually.

The *after-lifetime* at the age x, or as it is usually called *the expectation of life* at the age x, *i.e.*, the time which a man of average health of the age x may expect to live, is denoted by E_x. The mean after-lifetime is obtained by dividing the tabular years of life (Q_x) which are enjoyed after any age (x) by the tabular number living at that age. The *mean lifetime* is $\frac{Q_0}{l_0}$ or the expectation of life at birth.

$$E_x = \frac{Q_x}{l_x} = \frac{L_x}{l_x} - \tfrac{1}{2} \text{ nearly.}$$

The *mean after-lifetime* of a population of *the age x and upwards* is denoted by $E_x' = \frac{Y_x}{Q_x}$ since Y_x is the number of years which the Q_x persons will live. Now Y_x = the number of years the Q_x persons have lived over the age x and xQ_x = the years they have lived under the age x. $\therefore xQ_x + Y_x$ = the total number of years which the Q_x persons have lived.

$\therefore \frac{xQ_x + Y_x}{Q_x} = x + \frac{Y_x}{Q_x} = x + E'_x$ = the *mean age* of all the persons living of the age x and upwards; hence $E'_0 = \frac{Y_0}{Q_0}$ = the mean age of the whole population.

Again, *the mean age at death* of a number of persons is their mean age *plus* their after-lifetime. It is therefore for persons living at a given age (l_x), their age x *plus* their after-lifetime E_x, or $x + E_x$; and for persons living at the age x and upwards (Q_x), their mean age $x + E_x'$ *plus* their after-lifetime E_x or $x + 2\ E_x'$.

MADRAS,
14th February 1882.

G. STOKES,
Deputy Superintendent of Census Operations.

STATEMENT No I

Table showing the Births and Deaths for Ten Years.

Years	Births			Born dead (included in first year).			Deaths														
							0 and under 1			1 and under 6			6 and under 12.			Other Ages.			Total Deaths		
	Males	Females	Total.	Males	Females	Total	Males	Females	Total.	Males	Females	Total.	Males.	Females	Total	Males.	Females	Total	Males	Females	Total
1st Nov. 1870 to 1871	326,321	305,479	631,800	6,919	6,379	13,298	50,038	48,659	98,697	39,571	37,219	76,790	17,370	14,747	32,117	193,006	168,842	361,848	299,985	269,467	569,452
Do 1871 to 1872	302,445	286,760	589,205	5,994	5,350	11,344	52,458	46,531	98,989	45,191	42,504	87,695	16,141	13,706	29,847	160,817	141,197	302,014	274,607	243,938	518,545
Do. 1872 to 1873	280,759	266,298	547,057	5,730	5,251	10,981	49,352	44,899	94,251	42,128	39,386	81,514	15,207	13,625	28,832	160,535	148,501	309,036	267,222	246,411	513,633
Do 1873 to 1874	298,715	282,055	580,770	5,906	5,477	11,383	53,564	47,156	100,720	44,702	41,743	86,445	15,475	13,415	28,890	170,338	153,983	324,321	284,079	256,297	540,376
Do 1874 to 1875	331,086	314,966	646,052	6,992	6,050	13,042	58,820	51,921	110,741	50,040	47,350	97,390	22,651	19,408	42,059	199,153	183,733	382,886	330,664	302,412	633,076
Do 1875 to 1876	346,226	325,928	672,154	6,949	6,267	13,216	59,089	51,757	110,846	56,762	53,109	109,871	30,514	25,501	56,015	234,233	216,277	444,510	380,598	340,644	721,242
Total	1,885,552	1,781,486	3,667,038	38,490	34,774	73,264	323,321	290,923	614,244	278,394	261,311	539,705	117,358	100,402	217,760	1,118,082	1,006,533	2,124,615	1,837,155	1,659,169	3,496,324
1st Nov 1876 to 1877	280,599	263,569	544,168	6,015	5 292	11,307	65,359	58,996	124,355	124,878	116,681	241,559	77,506	63,313	140,819	558,764	429,189	987,953	826,507	668,178	1,494,686
Do. 1877 to 1878	187,262	174,305	361,567	4,024	3,622	7,646	43,224	40,321	83,545	79,844	75,372	155,216	45,258	38,462	83,720	384,933	336,470	721,403	553,259	490,625	1,043,884
Do. 1878 to 1879	246 482	231,531	478,013	5,159	4,479	9,638	40,432	35,508	75,940	35,854	34,511	70,365	22,191	19,879	42,070	227,958	215,330	443,288	326,435	305,228	631,663
Do 1879 to 1880	347,666	326,974	674,640	7,186	6,417	13,603	57,063	48,751	105,814	29,648	28,137	57,785	14,936	13,326	28,262	158,849	158,905	317,754	260,496	249,119	509,615
Total .	1,062,009	996 379	2,058,388	22,384	19,810	42,194	206,078	183,576	389,654	270 224	254,701	524,925	159,891	134,980	294,871	1,330,504	1,139,894	2,470 398	1.966,697	1,713,150	3,679,848

Note —In this Presidency it frequently happens that no birth and death returns are received for a certain month, or other period, from the returning officers of a tract of country In order to enable the birth and death rate as shown by the returns to be calculated free of the error from this cause, as each return for a tract of country is posted, the population according to the returns of 1871 for that tract is also posted and the rate is calculated for the population from which returns were received The above return shows the number of births and deaths actually returned, corrected in the proportion which the average annual population from which returns were received bears to 30 825,577, the population exclusive of that of Ganjam Mahals, Jeypore, and the State of Puducotta, for which age particulars are given in the Census returns of 1871

No. 2-A.

Statement showing Loss of Population by Emigration during the Six Years from 1st November 1870 to 1st November 1876, and from the 1st November in One Year to 1st November in the Succeeding Year during the same Period.

Ages.	1870-76.			1870-71.			1871-72.			1872-73.			1873-74.			1874-75.			1875-76.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
0 and under 2	1,698	1,655	3,353	268	262	531	191	186	377	185	181	366	425	414	839	184	179	363	444	433	877
2 „ 10	6,380	6,103	12,483	1,010	965	1,975	718	687	1,405	696	666	1,362	1,596	1,527	3,123	691	661	1,352	1,009	1,597	3,206
10 „ 20	10,645	12,471	29,116	3,320	2,215	5,535	1,035	1,212	2,247	461	1,142	1,603	5,653	3,442	9,095	186	1,082	1,268	5,990	3,378	9,368
20 „ 30	46,473	31,074	77,547	9,239	5,519	14,758	2,886	3,020	5,906	1,289	2,846	4,135	16,783	8,576	24,359	519	2,096	3,215	16,725	8,417	25,142
30 „ 40	30,493	9,252	39,745	6,082	1,641	7,725	1,895	899	2,794	844	847	1,691	10,357	2,554	12,911	340	803	1,143	10,975	2,506	13,481
40 „ 50	5,227	2,211	7,438	1,043	393	1,436	325	215	540	145	202	347	1,775	610	2,385	58	192	250	1,891	599	2,490
Above 50	176	223	399	35	40	75	11	22	33	5	20	25	60	62	122	2	19	21	63	60	123
Total	107,092	62,989	170,081	21,028	11,037	32,065	7,063	6,241	13,304	3,625	5,904	9,529	35,649	17,185	52,834	1,980	5,032	7,012	37,747	16,990	54,737

No. 2-B.

Statement showing the Estimated Ages of the Persons under 20 Years of Age lost to the Population of the Madras Presidency by Emigration between 1st November 1870 and 1st November 1876.

Ages.	1st November 1870 to 1st November 1876.			Ages.	1st November 1870 to 1st November 1876.		
	Males.	Females.	Total.		Males	Females.	Total.
0 and under 1 ...	873	845	1,718	10 and under 11	978	855	1,833
1 „ 2 ...	825	810	1,635	11 „ 12 ..	1,075	910	1,985
2 „ 3 ...	790	781	1,571	12 „ 13 .	1,202	965	2,167
3 „ 4	756	768	1,524	13 „ 14 ...	1,338	1,075	2,413
4 „ 5 ...	752	746	1,498	14 „ 15	1,494	1,134	2,628
5 „ 6 ...	755	738	1,493	15 „ 16 ...	1,669	1,241	2,910
6 „ 7 ...	770	740	1,510	16 „ 17 ..	1,871	1,356	3,227
7 „ 8 ..	801	751	1,552	17 „ 18 ...	2,092	1,489	3,581
8 „ 9 ..	847	773	1,620	18 „ 19 ...	2,329	1,645	3,974
9 „ 10	909	806	1,715	19 „ 20 ...	2,597	1,801	4,398

No. 3.

Statement showing the Population of the Madras Presidency in each year of age on the 14th November 1871.

Ages (*x*).	Population, or the living in each year of age within the limits of the Madras Presidency, except Pudukóta, Jeypore, and the Gaujam Maliahs, on the night of the 14th November 1871.			(1) Sum of the Numbers living of every age (*x*) and upwards to the last age in the table; also (2) the years which the males, females, and persons, or immigrants to replace them, living at the age (*x*) will live within the limits of the Madras Presidency as before defined.			(1) The years which the males, females, and persons, or immigrants to replace them, at the age (*x*) and upwards will live within the limits of the Madras Presidency as before defined; also (2) the years they have lived over (*x*).			Ages (*x*).
	$P_x = \frac{l_x + l_{x+1}}{2}$			$Q_x = \Sigma P_x$			$Y_x = \frac{Q_x + Q_{x+1}}{2} = Y_{x+1} + Q_{x+1} + \frac{1}{2} P_x$			
	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	
0	587,102	564,765	1,151,867	15,469,580	15,365,997	30,835,577	357,450,949	357,835,984	715,286,933	0
1	512,864	500,973	1,013,837	14,882,478	14,801,232	29,683,710	342,274,920	342,752,370	685,027,290	1
2	497,256	484,920	982,176	14,369,614	14,300,259	28,669,873	327,648,874	328,201,625	655,850,499	2
3	482,863	470,204	952,567	13,872,358	13,815,339	27,687,697	313,527,888	314,143,826	627,671,714	3
4	468,210	456,683	924,893	13,389,995	13,345,135	26,735,130	299,896,712	300,563,589	600,460,301	4
5	454,424	444,147	898,571	12,921,785	12,888,452	25,810,237	286,740,822	287,446,796	574,187,618	5
6	441,240	432,449	873,689	12,467,361	12,444,305	24,911,666	274,046,249	274,780,418	548,826,667	6
7	428,498	421,444	849,942	12,026,121	12,011,856	24,037,977	261,799,508	262,552,338	524,351,846	7
8	416,148	410,994	827,142	11,597,623	11,590,412	23,188,035	249,987,636	250,751,204	500,738,840	8
9	404,039	400,977	805,016	11,181,475	11,179,418	22,360,893	238,598,087	239,366,289	477,964,376	9
10	392,434	391,283	783,717	10,777,436	10,778,441	21,555,877	227,618,632	228,387,360	456,005,992	10
11	380,998	381,812	762,810	10,385,002	10,387,158	20,772,160	217,037,413	217,804,561	434,841,974	11
12	369,803	372,479	742,282	10,004,004	10,005,346	20,009,350	206,842,910	207,608,309	414,451,219	12
13	358,825	363,207	722,032	9,634,201	9,632,867	19,267,068	197,023,808	197,789,203	394,813,011	13
14	348,053	353,934	701,987	9,275,376	9,269,660	18,545,036	187,569,020	188,337,940	375,906,960	14
15	335,119	342,679	677,798	8,927,323	8,915,726	17,843,049	178,467,671	179,245,247	357,712,918	15
16	323,461	332,083	655,544	8,592,204	8,573,047	17,165,251	169,707,908	170,500,861	340,208,769	16
17	312,930	322,078	635,008	8,268,743	8,240,964	16,509,707	161,277,435	162,093,856	323,371,290	17
18	303,387	312,599	615,986	7,955,813	7,918,886	15,874,699	153,165,157	154,013,931	307,179,088	18
19	294,699	303,588	598,287	7,652,426	7,606,287	15,258,713	145,361,038	146,251,345	291,612,383	19
20	286,747	294,987	581,734	7,357,727	7,302,699	14,660,426	137,855,962	138,796,852	276,652,814	20
21	279,403	286,747	566,150	7,070,980	7,007,712	14,078,692	130,641,609	131,641,647	262,283,256	21
22	272,569	278,822	551,391	6,791,577	6,720,965	13,512,542	123,710,331	124,777,309	248,487,640	22
23	266,142	271,167	537,309	6,519,008	6,442,143	12,961,151	117,055,039	118,195,755	235,250,794	23
24	260,030	263,744	523,774	6,252,866	6,170,976	12,423,842	110,669,102	111,889,196	222,558,298	24
25	255,811	258,182	513,993	5,992,836	5,907,232	11,900,068	104,546,251	105,850,092	210,396,343	25
26	250,863	251,981	502,844	5,737,025	5,649,050	11,386,075	98,681,321	100,071,951	198,753,272	26
27	245,315	245,261	490,576	5,486,162	5,397,069	10,883,231	93,069,728	94,548,892	187,618,620	27
28	239,289	238,132	477,421	5,240,847	5,151,808	10,392,655	87,706,224	89,274,454	176,980,678	28
29	232,897	230,696	463,593	5,001,558	4,913,676	9,915,234	82,585,022	84,241,712	166,826,734	29
30	226,242	223,047	449,289	4,768,661	4,682,980	9,451,641	77,699,913	79,443,384	157,143,297	30
31	219,418	215,283	434,701	4,542,419	4,459,933	9,002,352	73,044,373	74,871,928	147,916,301	31
32	212,507	207,452	419,959	4,323,001	4,244,650	8,567,651	68,611,663	70,519,637	139,131,300	32
33	205,586	199,655	405,241	4,110,494	4,037,198	8,147,692	64,394,916	66,378,713	130,773,629	33
34	198,722	191,948	390,670	3,904,908	3,837,543	7,742,451	60,387,215	62,441,343	122,828,558	34
35	191,949	182,755	374,704	3,706,186	3,645,595	7,351,781	56,581,668	58,699,774	115,281,442	35
36	185,515	174,651	360,166	3,514,237	3,462,840	6,977,077	52,971,457	55,145,557	108,117,014	36
37	179,350	167,467	346,817	3,328,722	3,288,189	6,616,911	49,549,978	51,770,043	101,320,021	37
38	173,390	161,042	334,432	3,149,372	3,120,722	6,270,094	46,310,931	48,565,588	94,876,519	38
39	167,576	155,230	322,806	2,975,982	2,959,680	5,935,662	43,248,254	45,525,387	88,773,641	39
40	161,856	149,896	311,752	2,808,406	2,804,450	5,612,856	40,356,060	42,643,322	82,999,382	40
41	156,183	144,917	301,100	2,646,550	2,654,534	5,301,104	37,628,582	39,913,820	77,542,402	41
42	150,517	140,181	290,698	2,490,367	2,509,637	5,000,004	35,060,124	37,331,725	72,391,849	42
43	144,826	135,588	280,414	2,339,850	2,369,456	4,709,306	32,645,016	34,892,179	67,537,195	43
44	139,081	131,050	270,131	2,195,024	2,233,868	4,428,892	30,377,579	32,590,517	62,968,096	44
45	134,679	127,191	261,870	2,055,943	2,102,818	4,158,761	28,252,096	30,422,174	58,674,270	45
46	129,394	122,820	252,214	1,921,264	1,975,627	3,896,891	26,263,493	28,382,952	54,646,445	46
47	123,403	118,014	241,417	1,791,870	1,852,807	3,644,677	24,406,926	26,468,735	50,875,661	47
48	116,870	112,846	229,716	1,668,467	1,734,793	3,403,260	22,676,758	24,674,935	47,351,693	48
49	109,948	107,384	217,332	1,551,597	1,621,947	3,173,544	21,066,726	22,996,565	44,063,291	49
50	102,779	101,685	204,464	1,441,649	1,514,563	2,956,212	19,570,103	21,428,310	40,998,413	50
51	95,493	95,812	191,305	1,338,870	1,412,878	2,751,748	18,179,844	19,964,590	38,144,434	51
52	88,212	89,814	178,026	1,243,377	1,317,066	2,560,443	16,888,721	18,599,618	35,488,339	52

Note.—Since $l_x = 2Q_x - 4(P_{x+1} + P_{x+3} + P_{x+5} + \&c$, to end of the table, supposing the population stationary, the population

deaths annually,

No. 3.

Statement showing the Population of the Madras Presidency in each year of age on the 14th November 1871— Continued).

Ages (x).	Population, or the living in each year of age within the limits of the Madras Presidency, except Pudukóta, Jeypore, and the Ganjam Maliahs, on the night of the 14th November 1871. $P_x = \frac{l_x + l_{x+1}}{2}$			(1) Sum of the Numbers living of every age (x) and upwards to the last age in the table, also (2) the years which the males, females, and persons, or immigrants to replace them, living at the age (x) will live within the limits of the Madras Presidency as before defined. $Q_x = \Sigma P_x$			(1) The years which the males, females, and persons, or immigrants to replace them, at the age (x) and upwards will live within the limits of the Madras Presidency as before defined, also (2) the years they have lived over (x) $Y_x = \frac{Q_x + Q_{x+1}}{2} = Y_{x+1} + Q_{x+1} + \frac{1}{2} P_x$			Ages (x).
	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	
53	81,015	83,739	164 784	1,155,165	1,227,252	2,382,417	15,689,450	17,327,459	33,016,909	53
54	74,089	77,623	151,712	1,074,120	1,143,513	2,217,633	14 574,808	16,142,077	30,716,885	54
55	66,049	68,032	134,081	1,000,031	1,065,890	2,065,921	13,537,733	15,037,376	28,575,109	55
56	59,130	59,953	119,083	933,982	997,858	1,931,840	12,570,727	14,005,502	26,576,229	56
57	53,220	53,226	106,446	874,852	937,905	1,812,757	11,666,310	13,037,621	24,703,931	57
58	48,211	47,698	95,909	821,632	884,679	1,706,311	10,818,068	12,126,329	22,944,397	58
59	44,007	43,224	87,231	773,421	836,981	1,610,402	10,020,542	11,265,499	21,286,041	59
60	40,508	39,668	80,176	729,414	793,757	1,523,171	9,269,125	10,450,130	19,719,255	60
61	37,625	36,900	74,525	688,906	754,089	1,442,995	8,559,965	9,676,207	18,236,172	61
62	35,273	34,800	70,073	651,281	717,189	1,368,470	7,889,872	8,940,568	16 830,440	62
63	33,373	33,253	66,626	616,008	682,389	1,298,397	7,256,228	8,240,779	15,497,007	63
64	31,849	32,155	64,004	582,635	649,136	1,231,771	6,656,907	7,575,017	14,231,924	64
65	30,998	32,050	63,048	550,786	616,981	1,167,767	6,090,197	6,941,959	13,032,156	65
66	30,219	31,890	62,109	519,788	584,931	1,104,719	5,554,910	6,341,003	11 895,913	66
67	29,492	31,669	61,161	489,569	553,041	1,042,610	5,050,232	5,772,017	10,822,249	67
68	28,800	31,381	60,181	460,077	521,372	981,449	4,575,409	5,234,811	9 810,220	68
69	28,135	31,018	59,153	431,277	489,991	921,268	4,129,732	4,729,130	8,858,862	69
70	27,449	30,578	58,027	403,142	458,973	862,115	3,712,523	4,254,648	7,967,171	70
71	26,783	30,086	56,869	375,693	428,395	804,088	3,323,106	3,810,964	7,134,070	71
72	26,089	29,450	55,539	348,910	398,309	747,219	2,960,805	3 397,612	6,358,417	72
73	25,365	28,758	54,123	322,821	368,859	691,680	2,624,940	3,014,028	5,638,968	73
74	24,605	27,983	52,588	297,456	340,101	637,557	2,314,802	2,659,548	4,974,350	74
75	23,911	27,134	51,045	272,851	312,118	584,969	2,029,649	2,333,439	4,363,088	75
76	23,100	26,183	49,283	248,940	284,984	533,924	1,768,754	2,034,888	3,803,642	76
77	22,180	25,142	47,322	225,840	258,801	484,641	1,531,364	1,762,996	3 291,360	77
78	21,182	24,020	45,202	203,660	233,659	437,319	1,316,614	1,516,766	2,834,580	78
79	20,109	22,827	42,936	182,178	209,639	392,117	1,123,545	1,295,117	2,418,662	79
80	18,972	21,574	40,546	162,369	186,812	349,181	951,122	1,096,892	2,048,014	80
81	17,787	20,271	38,058	143,397	165,238	308,635	798,239	920,867	1,719,106	81
82	16,566	18,927	35,493	125,610	144,967	270,577	663,736	765,765	1,429 501	82
83	15,320	17,553	32,873	109,044	126,040	235,084	546,409	630,262	1,176,671	83
84	14,063	16,159	30,222	93,724	108,487	202,211	445,025	512,999	958,024	84
85	12,801	14,754	27,555	79,661	92,328	171,989	358,333	412,592	770,925	85
86	11,448	13,237	24,685	66,860	77,574	144,434	285,073	327,611	612,714	86
87	10,095	11,714	21,809	55,412	64,337	119,749	223,937	256,686	480,623	87
88	8,762	10,210	18,972	45,317	52,623	97,940	173,573	198,206	371,779	88
89	7,472	8,749	16,221	36,555	42,413	78,968	132,637	150,688	283,325	89
90	6,251	7,363	13,617	29,083	33,604	62,747	99,818	112,650	212,468	90
91	5,138	6,082	11,220	22,829	26,301	49,130	73,862	82,668	156,530	91
92	4,155	4,943	9,098	17,691	20,219	37,910	53,602	59,408	113,010	92
93	3,341	3,978	7,319	13,536	15,276	28,812	37,989	41,661	79,650	93
94	2,735	3,234	5,969	10,195	11,298	21,493	26,124	28,374	54,198	94
95	2,191	2,370	4,561	7,460	8,064	15,524	17,297	18,693	35,990	95
96	1,710	1,848	3,558	5,269	5,694	10,963	10,933	11,814	22,747	96
97	1,290	1,394	2,684	3,559	3,846	7,405	6,519	7,044	13,563	97
98	932	1,007	1,939	2 269	2,452	4,721	3,605	3,895	7,500	98
99	633	684	1,317	1,337	1,445	2,782	1,802	1,947	3,749	99
100	392	424	816	704	761	1,465	782	844	1,626	100
101	210	227	437	312	337	649	274	295	569	101
102	86	93	179	102	110	212	67	72	139	102
103	15	16	31	16	17	33	8	9	17	103
104	1	1	2	1	1	2	0	0	0	104
105	0	0	0	0	0	0	0	0	0	105

hown in this table would be sustained by 653,868 male births annually and by 622,762 female births. These would also be the number of

LIFE-TABLES.

SINGLE LIVES.

YEARLY TABLE.

MALE AND FEMALE.

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—PERSONS.

Age	Dying in each year of age 0—1, 1—2, &c	Born and living at each age.	Sum of the numbers born and living at each age (x) and from age x to the last age in the table	Population or the living in each year of age 0—1, 1—2, &c.	(1) Sum of the living of every age x and upwards to the last age in the table; also (2) the years which the persons l_x will live	(1) The years which the persons at the age x and upwards will live; also (2) the years which they have lived over x.	Age
x	d_x.	l_x.	L_x.	P_x.	Q_x.	Y_x	x.
0	171,065	1,000,000	29,611,720	912,463	29,109,182	737,402,944	0
1	51,146	828,935	28,611,720	803,160	28,196,719	708,749,991	1
2	32,646	777,789	27,782,785	761,362	27,393,559	680,954,855	2
3	27,200	745,143	27,004,996	731,467	26,632,197	653,941,977	3
4	22,226	717,943	26,259,853	706,788	25,900,730	627,675,514	4
5	17,840	695,717	25,541,910	686,786	25,193,942	602,128,178	5
6	14,107	677,877	24,846,193	670,824	24,507,156	577,277,630	6
7	11,061	663,770	24,168,316	658,235	23,836,332	553,105,887	7
8	8,708	652,709	23,504,546	648,322	23,178,097	529,598,673	8
9	7,034	644,001	22,851,837	640,474	22,529,775	506,744,737	9
10	6,001	636,967	22,207,836	633,967	21,889,301	484,535,200	10
11	5,545	630,966	21,570 869	628,193	21,255,334	462,962,883	11
12	5,581	625,421	20 939,903	622,630	20,627,141	442,021,646	12
13	5,851	619,840	20,314,482	616,914	20,004,511	421,705,821	13
14	6,373	613,989	19,694,642	610,802	19,387,597	402,009,768	14
15	7,013	607,616	19,080,653	604,109	18,776,795	382,927,573	15
16	7,611	600,603	18,473,037	596,797	18,172,686	364,152,833	16
17	7,811	592,992	17,872,434	589,086	17,575,889	346,578,546	17
18	8,067	585,181	17,279,442	581,147	16,986,803	329,297,200	18
19	8,360	577,114	16,694,261	572,933	16,405,656	312,600,971	19
20	8,670	568,754	16,117,147	564,419	15,832,723	296,481,782	20
21	8,983	560,084	15,548,393	555,592	15,268,304	280,931,269	21
22	9,285	551,101	14,988,309	546,458	14,712,712	265,940,761	22
23	9,566	541,816	14,437,208	537,032	14,166,254	251,501,279	23
24	9,817	532,250	13,895,392	527,341	13,629,222	237,603,541	24
25	10,033	522,433	13,363,142	517,416	13,101,881	224,237,990	25
26	10,207	512,400	12,840,709	507,296	12,584,465	211,394,818	26
27	10,338	502,193	12,328,309	497,023	12,077,169	199,064,001	27
28	10,433	491,855	11,826,116	486,638	11,580,146	187,235,344	28
29	10,487	481,422	11,334,261	476,178	11,093,508	175,898,517	29
30	10,509	470,935	10,852,839	465,680	10,617,330	165,043,099	30
31	10,496	460,426	10,381,904	455,177	10,151,650	154,658,610	31
32	10,460	449,930	9,921,478	444,699	9,696,473	144 734,549	32
33	10,403	439,470	9,471,548	434,268	9,251,774	135,260,426	33
34	10,332	429,067	9,032,078	423,900	8,817,506	126,225,786	34
35	10,254	418,735	8,603,011	413,607	8,393,606	117,620,231	35
36	10,170	408,481	8,184,276	403,396	7,979,999	109,433,429	36
37	10,096	398,311	7,775,795	393,262	7,576,603	101,655,129	37
38	10,037	388,215	7,377,484	383,196	7,183,341	94,275,157	38
39	10,002	378,178	6,989,269	373,177	6,800,145	87,283,414	39
40	10,001	368,176	6,611,091	363,175	6 426,968	80,669,858	40
41	10,037	358,175	6,242,915	353,156	6,063 793	74,424,478	41
42	10,119	348,138	5,884,740	343,078	5,710,637	68,537,264	42
43	10,251	338,019	5,536,602	332,893	5,367,559	62 998,166	43
44	10,438	327,768	5,198,583	322,548	5,034,666	57,797,954	44
45	10,683	317,330	4,870,815	311,988	4,712,118	52,923,663	45
46	10,980	306,647	4,553,485	301,156	4,400,130	48,367,539	46
47	11,332	295,667	4,246,838	290,000	4,098,974	44,117,987	47
48	11,735	284,335	3,951,171	278,467	3,808,974	40 164,013	48
49	12,184	272,600	3,666,836	266,507	3,530,507	36,494,273	49
50	12,665	260,416	3,394,236	254,083	3,264,000	33,097,020	50
51	13,129	247,751	3,138,820	241,186	3,009,917	29,960,062	51
52	13,404	234,622	2,886,069	227,920	2,768,731	27,070,738	52
53	13,500	221,218	2,651,447	214,468	2 540,811	24,415,968	53
54	13,437	207,718	2,430,229	200,999	2,326,343	21,9[illegible],391	54

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—PERSONS.

Age.	Dying in each year of age 0—1, 1—2, &c.	Born and living at each age.	Sum of the numbers born and living at each age (x) and from age x to the last age in the table	Population or the living in each year of age 0—1, 1—2, &c.	(1) Sum of the living of every age x and upwards to the last age in the table; also (2) the years which the persons l_x will live.	(1) The years which the persons at the age x and upwards will live; also (2) the years which they have lived over x.	Age.
x	d_x.	l_x.	L_x	P_x	Q_x	Y_x.	x.
55	13,237	194,281	2,222,511	187,662	2,125,344	19,756,548	55
56	12,840	181,044	2,028,230	174,623	1,937,682	17,725,035	56
57	12,384	168,204	1,847,186	162,012	1,763,059	15,874,665	57
58	11,877	155,820	1,678,982	149,881	1,601,047	14,192,612	58
59	11,327	143,943	1,523,162	138,279	1,451,166	12,666,506	59
60	10,747	132,616	1,379,219	127,242	1,312,887	11,284,480	60
61	10,146	121,869	1,246,603	116,796	1,185,645	10,035,214	61
62	9,536	111,723	1,124,734	106,954	1,068,849	8,907,968	62
63	8,923	102,187	1,013,011	97,725	961,895	7,892,597	63
64	8,315	93,264	910,824	89,106	864,170	6,979,565	64
65	7,720	84,949	817,560	81,089	775,064	6,159,949	65
66	7,161	77,229	732,611	73,648	693,975	5,425,430	66
67	6,615	70,068	655,382	66,760	620,327	4,768,279	67
68	6,086	63,453	585,314	60,410	553,567	4,181,333	68
69	5,585	57,367	521,861	54,574	493,157	3,657,971	69
70	5,106	51,782	464,494	49,228	438,583	3,192,101	70
71	4,658	46,676	412,712	44,347	389,355	2,778,133	71
72	4,239	42,018	366,036	39,898	345,008	2,410,952	72
73	3,849	37,779	324,018	35,854	305,110	2,085,893	73
74	3,490	33,930	286,239	32,184	269,256	1,798,711	74
75	3,159	30,440	252,309	28,860	237,072	1,545,547	75
76	2,864	27,281	221,869	25,849	208,212	1,322,905	76
77	2,596	24,417	194,588	23,119	182,363	1,127,618	77
78	2,351	21,821	170,171	20,645	159,244	956,815	78
79	2,129	19,470	148,350	18,405	138,599	807,894	79
80	1,925	17,341	128,880	16,378	120,194	678,498	80
81	1,742	15,416	111,539	14,545	103,816	566,494	81
82	1,575	13,674	96,123	12,886	89,271	469,951	82
83	1,424	12,099	82,449	11,387	76,385	387,123	83
84	1,286	10,675	70,350	10,032	64,998	316,432	84
85	1,161	9,389	59,675	8,808	54,966	256,451	85
86	1,059	8,228	50,286	7,698	46,158	205,889	86
87	960	7,169	42,058	6,688	38,460	163,581	87
88	867	6,209	34,889	5,775	31,772	128,465	88
89	779	5,342	28,680	4,952	25,997	99,581	89
90	697	4,563	23,338	4,214	21,045	76,060	90
91	619	3,866	18,775	3,556	16,831	57,122	91
92	544	3,247	14,909	2,975	13,275	42,070	92
93	477	2,703	11,662	2,464	10,300	30,283	93
94	412	2,226	8,959	2,019	7,836	21,216	94
95	355	1,814	6,733	1,636	5,817	14,390	95
96	325	1,459	4,919	1,296	4,181	9,391	96
97	290	1,134	3,460	988	2,885	5,859	97
98	248	844	2,326	719	1,897	3,468	98
99	202	596	1,482	495	1,178	1,931	99
100	153	394	886	317	683	1,001	100
101	106	241	492	187	366	477	101
102	67	135	251	101	179	205	102
103	38	68	116	49	78	77	103
104	18	30	48	20	29	24	104
105	8	12	18	7	9	5	105
106	2	4	6	2	2	0	106
107	2	2	2	0	0	0	107

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—MALES.

Age.	Dying in each year of age 0—1, 1 -2, &c.	Born and living at each age	Sum of the numbers born and living at each age (x) and from x to the last age in the table.	Population or the living in each year of age 0—1, 1—2, &c.	(1) Sum of the living of every age x and upwards to the last age in the table; also (2) the years which the males (l_x) will live.	(1) The years which the males at the age (x) and upwards will live; also (2) the years which they have lived over x.	Age.
x	d_x	l_x	L_x	P_x	Q_x	Y_x	x
0	91,487	508,776	14,866,077	461,903	14,610,251	365,731,208	0
1	27,358	417,289	14,357,301	403,500	14,148,348	351,351,909	1
2	16,340	389,931	13,940,012	381,704	13,744,848	337,405,311	2
3	13,472	373,591	13,550,081	366,812	13,363,144	323,851,315	3
4	10,913	360,119	13,176,490	354,640	12,996,332	310,671,577	4
5	8,696	349,206	12,816,371	344,849	12,641,692	297,852,565	5
6	6,834	340,510	12,467,165	337,089	12,296,843	285,383,298	6
7	5,332	333,676	12,126,655	331,009	11,959,754	273,255,000	7
8	4,184	328,344	11,792,979	326,238	11,628,745	261,460,751	8
9	3,373	324,160	11,464,635	322,457	11,302,507	249,995,125	9
10	2,876	320,787	11,140,475	319,344	10,980,050	238,853,847	10
11	2,653	317,911	10,819,688	316,584	10,660,706	228,033,469	11
12	2,658	315,258	10,501,777	313,929	10,344,122	217,531,055	12
13	2,697	312,600	10,186,519	311,251	10,030,193	207,343,898	13
14	2,860	309,903	9,873,919	308,473	9,718,942	197,469,331	14
15	3,108	307,043	9,564,016	305,489	9,410,469	187,904,626	15
16	3,391	303,935	9,256,973	302,239	9,104,980	178,646,902	16
17	3,536	300,544	8,953,038	298,776	8,802,741	169,693,042	17
18	3,707	297,008	8,652,494	295,154	8,503,965	161,039,689	18
19	3,893	293,301	8,355,486	291,354	8,208,811	152,683,301	19
20	4,086	289,408	8,062,185	287,365	7,917,457	144,620,167	20
21	4,279	285,322	7,772,777	283,182	7,630,092	136,846,393	21
22	4,467	281,043	7,487,455	278,809	7,346,910	129,357,892	22
23	4,643	276,576	7,206,412	274,254	7,068,101	122,150,387	23
24	4,806	271,933	6,929,836	269,530	6,793,847	115,219,413	24
25	4,951	267,127	6,657,903	264,651	6,524,317	108,560,331	25
26	5,076	262,176	6,390,776	259,638	6,259,666	102,168,340	26
27	5,179	257,100	6,128,600	254,510	6,000,028	96,038,493	27
28	5,266	251,921	5,871,500	249,288	5,745,518	90,165,720	28
29	5,332	246,655	5,619,579	243,989	5,496,230	84,544,846	29
30	5,383	241,323	5,372,924	238,631	5,252,241	79,170,611	30
31	5,417	235,940	5,131,601	233,231	5,013,610	74,037,686	31
32	5,439	230,523	4,895,661	227,803	4,780,379	69,140,692	32
33	5,451	225,084	4,665,138	222,358	4,552,576	64,474,215	33
34	5,455	219,633	4,440,054	216,905	4 330,218	60,032,818	34
35	5,455	214,178	4,220,421	211,450	4,113,313	55,811,053	35
36	5,448	208,723	4,006,243	205,999	3,901,863	51,803,465	36
37	5,445	203,275	3,797,520	200,552	3,695,864	48,004,602	37
38	5,447	197,830	3,594,245	195,106	3,495,312	44,409,014	38
39	5,460	192,383	3,396,415	189,653	3,300,206	41,011,255	39
40	5,487	186,923	3,204,032	184,179	3,110,553	37,805,876	40
41	5,530	181,436	3,017,109	178,671	2,926,374	34,787,413	41
42	5,592	175,906	2,835,673	173,110	2,747,703	31,950,375	42
43	5,675	170,314	2,659,767	167,476	2,574,593	29,289,227	43
44	5,779	164,639	2,489,453	161,749	2,407,117	26,798,372	44
45	5,907	158,860	2,324,814	155,906	2,245,368	24,472,130	45
46	6,049	152,953	2,165,954	149,928	2,089,462	22,304,715	46
47	6,211	146,904	2,013,001	143,798	1,939,534	20,290,217	47
48	6,388	140,693	1,866,097	137,499	1,795,736	18,422,582	48
49	6,579	134,305	1,725.404	131,015	1,658,237	16,695,596	49
50	6,776	127,726	1,591,099	124,338	1,527,222	15,102,867	50
51	6,979	120,950	1,463,373	117,460	1,402,884	13,637,814	51
52	7,072	113,971	1,342,423	110,435	1,285,424	12,293,660	52
53	7,066	106,899	1,228,452	103,366	1,174,989	11,063,154	53
54	6,975	99,833	1,121,553	96,345	1,071,623	9,940,148	54

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY

YEARLY TABLE—MALES

Age	Dying in each year of age 0—1, 1—2, &c	Born and living at each age.	Sum of the numbers born and living at each age (x) and from x to the last age in the table.	Population or the living in each year of age 0—1, 1—2, &c	(1) Sum of the living of every age x and upwards to the last age in the table; also (2) the years which the males (l_x) will live	(1) The years which the males at the age (x) and upwards will live, also (2) the years which they have lived over x	Age.
x	d_x	l_x	L_x	P_x	Q_x	Y_x	x
55	6,812	92,858	1,021,720	89,452	975,278	8,916,698	55
56	6,563	86,046	928,862	82,764	885,826	7,986,146	56
57	6,282	79,483	842,816	76,342	803,062	7,141,702	57
58	5,975	73,201	763,333	70,213	726,720	6,376,811	58
59	5,648	67,226	690,132	64,462	656,507	5,685,198	59
60	5,311	61,578	622,906	58,922	592,105	5,060,892	60
61	4,968	56,267	561,328	53,783	533,183	4,498,248	61
62	4,627	51,299	505,061	48,985	479,400	3,991,957	62
63	4,291	46,672	453,762	44,526	430,415	3,537,050	63
64	3,963	42,381	407,090	40,399	385,889	3,128,898	64
65	3,648	38,418	364,709	36,594	345,490	2,763,209	65
66	3,355	34,770	326,291	33,092	308,896	2,436,016	66
67	3,076	31,415	291,521	29,877	275,804	2,143,666	67
68	2,810	28,339	260,106	26,934	245,927	1,882,801	68
69	2,562	25,529	231,767	24,248	218,993	1,650,341	69
70	2,327	22,967	206,238	21,803	194,745	1,443,472	70
71	2,110	20,640	183,271	19,585	172,942	1,259,629	71
72	1,908	18,530	162,631	17,576	153,357	1,096,480	72
73	1,722	16,622	144,101	15,761	135,781	951,911	73
74	1,551	14,900	127,479	14,124	120,020	824,011	74
75	1,394	13,349	112,579	12,652	105,896	711,053	75
76	1,258	11,955	99,230	11,326	93,244	611,483	76
77	1 136	10,697	87,275	10,129	81,918	523,902	77
78	1,024	9,561	76,578	9,049	71,789	447,049	78
79	925	8,537	67,017	8,074	62,740	379,785	79
80	833	7,612	58,480	7,195	54,666	321,082	80
81	752	6,779	50,868	6,403	47,471	270,014	81
82	678	6,027	44,089	5,688	41,068	225,745	82
83	612	5,349	38,062	5,043	35,380	187,521	83
84	552	4,737	32 713	4,461	30,337	154,663	84
85	498	4,185	27,976	3,936	25,876	126,557	85
86	451	3,687	23,791	3,461	21,940	102,649	86
87	407	3,236	20,104	3,032	18,479	82,440	87
88	367	2,829	16,868	2,645	15,447	65,477	88
89	331	2,462	14,039	2,296	12,802	51,353	89
90	298	2,131	11,577	1,982	10,506	39,699	90
91	268	1,833	9,446	1,699	8,524	30,184	91
92	238	1,565	7,613	1,446	6,825	22,510	92
93	212	1,327	6,048	1,221	5,379	16,408	93
94	187	1,115	4,721	1,021	4,158	11,640	94
95	164	928	3,606	846	3,137	7,993	95
96	157	764	2,678	685	2,291	5,279	96
97	145	607	1,914	534	1,606	3,331	97
98	129	462	1,307	397	1,072	1,992	98
99	108	333	845	279	675	1,119	99
100	85	225	512	182	396	584	100
101	61	140	287	109	214	279	101
102	39	79	147	59	105	120	102
103	22	40	68	29	46	45	103
104	11	18	28	12	17	14	104
105	5	7	10	4	5	3	105
106	1	2	3	1	1	0	106
107	1	1	1	0	0	0	107

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—MALES.

l_x, Q_x, Y_x, and their Logarithms

Age (x)	l_x	Q_x	Y_x	λl_x	λQ_x	λY_x	Age (x)
0	508,776	14,610,251	365,731,208	5 7065266	7 1646576	8 5631620	0
1	417,289	14,148,348	351,351,909	5 6201368	7 1507058	8 5457424	1
2	389,931	13,744,848	337,405,311	5·5909881	7 1371399	8 5281519	2
3	373,591	13,363,144	323,851,315	5 5723969	7 1259087	8 5103456	3
4	360,119	12,996,332	310,671,577	5 5564458	7 1138208	8 4923015	4
5	349,206	12,641,692	297,852,565	5 5430812	7 1018052	8 4740013	5
6	340,510	12,296,843	285,383,298	5 5321305	7 0887936	8 4554286	6
7	333,676	11,959,754	273,255,000	5 5233255	7 0767223	8 4365682	7
8	328,344	11,628,745	261,460,751	5 5163290	7 0655329	8 4174065	8
9	324,160	11,302,507	249,995,125	5 5107593	7 0531748	8 3979315	9
10	320,787	10,980,050	238,853,847	5 5062163	7 0406043	8 3781322	10
11	317,911	10,660,706	228,033,469	5 5023059	7 0277859	8 3579986	11
12	315,258	10,344,122	217,531,055	5 4986658	7 0146936	8 3375213	12
13	312,600	10,030,193	207,343,898	5 4949894	7 0013092	8 3166912	13
14	309,903	9,718,942	197,469,331	5 4912255	6 9876190	8 2954996	14
15	307,043	9,410,469	187,904,626	5 4871995	6 9736123	8 2739374	15
16	303,935	9,104,980	178,646,902	5 4827808	6 9592790	8 2519955	16
17	300,544	8,802,741	169,693,042	5 4779087	6 9446180	8 2296640	17
18	297,008	8,503,965	161,039,689	5 4727678	6 9296214	8 2069330	18
19	293,301	8,208,811	152,683,301	5 4673129	6 9142803	8 1837915	19
20	289,408	7,917,457	144,620,167	5 4615100	6 8985858	8 1602289	20
21	285,322	7,630,092	136,846,393	5 4553348	6 8825297	8 1362333	21
22	281,043	7,346,910	129,357,892	5 4487722	6 8661047	8 1117929	22
23	276,576	7,068,101	122,150,387	5 4418147	6 8493033	8 0868949	23
24	271,933	6,793,847	115,219,413	5 4344615	6 8321159	8 0615256	24
25	267,127	6,524,317	108,560,331	5 4267175	6 8145351	8 0356711	25
26	262,176	6,259,666	102,168,340	5 4185921	6 7965511	8 0093163	26
27	257,100	6,000,028	96,038,493	5 4101027	6 7781533	7 9824453	27
28	251,921	5,745,518	90,165,720	5 4012636	6 7593292	7 9550415	28
29	246,655	5,496,230	84,544,846	5 3920901	6 7400649	7 9270871	29
30	241,323	5,252,241	79,170,611	5 3825978	6 7203447	7 8985640	30
31	235,940	5,013,610	74,037,686	5 3728014	6 7001506	7 8694528	31
32	230,523	4,780,379	69,140,692	5 3627136	6 6794623	7 8397837	32
33	225,084	4,552,576	64,474,215	5 3523440	6 6582572	7 8093861	33
34	219,633	4,330,218	60,032,818	5 3416979	6 6365098	7 7783887	34
35	214,178	4,113,313	55,811,053	5 3307754	6 6141918	7 7467202	35
36	208,723	3,901,863	51,803,465	5 3195703	6 5912720	7 7143588	36
37	203,275	3,695,864	48,004,602	5 3080836	6 5677160	7 6812829	37
38	197,830	3,495,312	44,409,014	5 2962932	6 5434860	7 6474711	38
39	192,383	3,300,206	41,011,255	5 2841673	6 5186726	7 6129031	39
40	186,923	3,110,553	37,805,876	5 2716626	6 4928377	7 5775593	40
41	181,436	2,926,374	34,787,413	5 2587233	6 4663298	7 5414222	41
42	175,906	2,747,703	31,950,375	5 2452803	6 4389698	7 5044760	42
43	170,314	2,574,593	29,289,227	5 2312500	6 4107086	7 4667079	43
44	164,639	2,407,117	26,798,372	5 2165332	6 3814972	7 4281085	44
45	158,860	2,245,368	24,472,130	5 2010137	6 3512875	7 3886718	45
46	152,953	2,089,462	22,304,715	5 1845578	6 3200345	7 3483967	46
47	146,904	1,939,534	20,290,217	5 1670333	6 2876974	7 3072867	47
48	140,693	1,795,736	18,422,582	5 1482739	6 2542426	7 2653505	48
49	134,305	1,658,237	16,695,596	5 1280928	6 2196464	7 2226019	49
50	127,726	1,527,222	15,102,867	5 1062810	6 1839022	7 1790594	50
51	120,950	1,402,884	13,637,814	5 0826068	6 1470217	7 1347451	51
52	113,971	1,285,424	12,293,660	5 0567951	6 1090465	7 0896812	52
53	106,899	1,174,989	11,063,454	5 0289743	6 0700338	7 0438907	53
54	99,833	1,071,623	9,940,148	4 9992726	6 0300420	6 9973928	54

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

Yearly Table—Males.

l_x, Q_x, Y_x, *and their* Logarithms.

Age (x).	l_x.	Q_x.	Y_x.	λl_x.	λQ_x.	λY_x.	Age (x).
55	92,858	975,278	8,916,698	4·9678171	5·9891284	6·9502041	55
56	86,016	885,826	7,986,146	4·9347331	5·9473484	6·9023372	56
57	79,483	803,062	7,141,702	4·9002726	5·9047191	6·8538017	57
58	73,201	726,720	6,376,811	4·8645148	5·8613671	6·8046036	58
59	67,226	656,507	5,685,198	4·8275396	5·8172393	6·7547456	59
60	61,578	592,105	5,060,892	4·7894271	5·7723988	6·7042271	60
61	56,267	533,183	4,498,248	4·7502569	5·7268764	6·6530434	61
62	51,299	479,400	3,991,957	4·7101073	5·6806980	6·6011859	62
63	46,672	430,415	3,537,050	4·6690546	5·6338874	6·5486412	63
64	42,381	385,889	3,128,898	4·6271728	5·5864624	6·4953914	64
65	38,418	345,490	2,763,209	4·5845326	5·5384355	6·4414137	65
66	34,770	308,896	2,436,016	4·5412009	5·4898123	6·3866802	66
67	31,415	275,804	2,143,666	4·4971343	5·4406006	6·3311571	67
68	28,339	245,927	1,882,801	4·4523902	5·3908062	6·2748044	68
69	25,529	218,993	1,650,341	4·4070288	5·3404902	6·2175737	69
70	22,967	194,745	1,443,472	4·3611125	5·2894064	6·1594084	70
71	20,640	172,942	1,259,629	4·3147052	5·2379005	6·1002427	71
72	18,530	153,357	1,096,480	4·2678711	5·1857036	6·0400007	72
73	16,622	135,781	951,911	4·2206751	5·1328390	5·9785964	73
74	14,900	120,020	824,011	4·1731814	5·0792536	5·9159330	74
75	13,349	105,896	711,053	4·1254528	5·0248796	5·8519019	75
76	11,955	93,214	611,483	4·0775504	4·9696209	5·7863844	76
77	10,697	81,918	523,902	4·0292415	4·9133793	5·7192501	77
78	9,561	71,789	447,049	3·9805035	4·8560579	5·6503551	78
79	8,537	62,740	379,785	3·9312829	4·7975445	5·5795378	79
80	7,612	54,666	321,082	3·8815252	4·7361255	5·5066160	80
81	6,779	47,471	270,014	3·8311588	4·6764284	5·4313862	81
82	6,027	41,068	225,745	3·7800976	4·6135036	5·3536192	82
83	5,349	35,980	187,521	3·7282404	4·5487578	5·2730499	83
84	4,737	30,337	154,663	3·6754701	4·4819726	5·1893864	84
85	4,185	25,876	126,557	3·6216528	4·4128971	5·1022862	85
86	3,687	21,910	102,649	3·5666376	4·3412366	5·0113548	86
87	3,236	18,179	82,410	3·5100679	4·2666785	4·9161380	87
88	2,829	15,447	65,477	3·4517026	4·1888441	4·8160888	88
89	2,462	12,802	51,353	3·3912767	4·1072778	4·7105658	89
90	2,131	10,506	39,699	3·3285001	4·0214374	4·5987796	90
91	1,833	8,524	30,184	3·2630575	3·9306134	4·1797768	91
92	1,565	6,823	22,510	3·1946073	3·8341027	4·3523755	92
93	1,327	5,379	16,408	3·1227811	3·7307015	4·2150556	93
94	1,115	4,158	11,640	3·0471832	3·6188845	4·0659530	94
95	928	3,137	7,993	2·9673898	3·4965145	3·9027098	95
96	761	2,291	5,279	2·8829481	3·3600251	3·7225517	96
97	607	1,606	3,331	2·7831995	3·2057155	3·5225746	97
98	462	1,072	1,992	2·6649816	3·0301948	3·2992893	98
99	333	675	1,119	2·5227551	2·8293038	3·0488301	99
100	225	396	584	2·3515699	2·5976952	2·7664128	100
101	140	214	279	2·1455315	2·3304138	2·4456042	101
102	79	105	120	1·8980670	2·0211893	2·0791812	102
103	40	46	45	1·6018915	1·6627578	1·6532125	103
104	18	17	14	1·2489746	1·2304489	1·1461280	104
105	7	5	3	0·8305059	0·6989700	0·4771213	105
106	2	1	0	0·3368618	0·0000000	...	106
107	1	0	0	·0000000	..	...	107

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

Yearly Table—Females.

Age	Dying in each year of age, 0—1, 1—2, &c.	Born and living at each age.	Sum of the numbers born and living at each age (x) and from x to the last age in the table.	Population or the living in each year of age 0—1, 1—2, &c.	(1) Sum of the living of every age x and upwards to the last age in the table; also (2) the years which the females x will live.	(1) The years which the females at the age (x) and upwards will live, also (2) the years which they have lived over x.	Age.
x.	d_x.	l_x.	L_x.	P_x.	Q_x	Y_x.	x
0	79,578	491,224	14,745,643	450,560	14,498,931	371,671,736	0
1	23,788	411,646	14,254,419	399,660	14,048,371	357,398,085	1
2	16,306	387,858	13,842,773	379,658	13,648,711	343,549,544	2
3	13,728	371,552	13,454,915	364,655	13,269,053	330,090,662	3
4	11,313	357,824	13,083,363	352,148	12,904,398	317,003,937	4
5	9,144	346,511	12,725,539	341,937	12,552,250	304,275,613	5
6	7,273	337,367	12,379,028	333,735	12,210,313	291,894,332	6
7	5,729	330,094	12,041,661	327,226	11,876,578	279,850,887	7
8	4,524	324,365	11,711,567	322,084	11,549,352	268,137,922	8
9	3,661	319,841	11,387,202	318,017	11,227,268	256,749,612	9
10	3,125	316,180	11,067,361	314,623	10,909,251	245,681,353	10
11	2,892	313,055	10,751,181	311,609	10,594,628	234,929,414	11
12	2,923	310,163	10,438,126	308,701	10,283,019	224,490,591	12
13	3,154	307,240	10,127,963	305,663	9,974,318	214,361,923	13
14	3,513	304,086	9,820,723	302,329	9,668,655	204,540,437	14
15	3,905	300,573	9,516,637	298,620	9,366,326	195,022,947	15
16	4,220	296,668	9,216,064	294,558	9,067,706	185,805,931	16
17	4,275	292,448	8,919,396	290,310	8,773,148	176,885,504	17
18	4,360	288,173	8,626,948	285,993	8,482,838	168,257,511	18
19	4,467	283,813	8,338,775	281,579	8,196,845	159,917,670	19
20	4,584	279,346	8,054,962	277,054	7,915,266	151,861,615	20
21	4,704	274,762	7,775,616	272,410	7,638,212	144,084,876	21
22	4,818	270,058	7,500,854	267,649	7,365,802	136,582,869	22
23	4,923	265,240	7,230,796	262,778	7,098,153	129,350,892	23
24	5,011	260,317	6,965,556	257,811	6,835,375	122,384,128	24
25	5,082	255,306	6,705,239	252,765	6,577,564	115,677,659	25
26	5,131	250,224	6,449,933	247,658	6,324,799	109,226,478	26
27	5,159	245,093	6,199,709	242,513	6,077,141	103,025,508	27
28	5,167	239,934	5,954,616	237,350	5,834,628	97,069,624	28
29	5,155	234,767	5,714,682	232,189	5,597,278	91,353,671	29
30	5,126	229,612	5,479,915	227,049	5,365,089	85,872,488	30
31	5,079	224,486	5,250,303	221,946	5,138,040	80,620,924	31
32	5,021	219,407	5,025,817	216,896	4,916,094	75,593,857	32
33	4,952	214,386	4,806,410	211,910	4,699,198	70,786,211	33
34	4,877	209,434	4,592,024	206,995	4,487,288	66,192,968	34
35	4,799	204,557	4,382,590	202,157	4,280,293	61,809,178	35
36	4,722	199,758	4,178,033	197,397	4,078,136	57,629,964	36
37	4,651	195,036	3,978,275	192,710	3,880,739	53,650,527	37
38	4,590	190,385	3,783,239	188,090	3,688,029	49,866,143	38
39	4,542	185,795	3,592,854	183,524	3,499,939	46,272,159	39
40	4,514	181,253	3,407,059	178,996	3,316,415	42,863,982	40
41	4,507	176,739	3,225,806	174,485	3,137,419	39,637,665	41
42	4,527	172,232	3,049,067	169,968	2,962,934	36,586,889	42
43	4,576	167,705	2,876,835	165,417	2,792,966	33,708,939	43
44	4,659	163,129	2,709,130	160,799	2,627,549	30,998,682	44
45	4,776	158,470	2,546,001	156,082	2,466,750	28,451,533	45
46	4,931	153,694	2,387,531	151,228	2,310,668	26,062,824	46
47	5,121	148,763	2,233,837	146,202	2,159,440	23,827,770	47
48	5,347	143,642	2,085,074	140,968	2,013,238	21,741,431	48
49	5,605	138,295	1,941,432	135,492	1,872,270	19,798,677	49
50	5,889	132,690	1,803,137	129,745	1,736,778	17,994,153	50
51	6,150	126,801	1,670,447	123,726	1,607,033	16,322,248	51
52	6,332	120,651	1,543,646	117,485	1,483,307	14,777,078	52
53	6,434	114,319	1,422,995	111,102	1,365,822	13,352,514	53
54	6,462	107,885	1,308,676	104,654	1,254,720	12,042,243	54

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY

Yearly Table—Females.

Age	Dying in each year of age 0—1, 1—2, &c	Born and living at each age.	Sum of the numbers born and living at each age (x) and from x to the last age in the table.	Population or the living in each year of age 0—1, 1—2, &c.	(1) Sum of the living of every age x and upwards to the last age in the table; also (2) the years which the females l_x will live.	(1) The years which the females at the age (x) and upwards will live; also (2) the years which they have lived over x.	Age
x	d_x.	l_x.	L_x	P_x	Q_x.	Y_x.	x
55	6,425	101,423	1,200,791	98,210	1,150,066	10,839,850	55
56	6,277	94,998	1,099,368	91,859	1,051,856	9,788,889	56
57	6,102	88,721	1,004,370	85,670	959,997	8,732,963	57
58	5,902	82,619	915,649	79,668	874,327	7,815,801	58
59	5,679	76,717	833,030	73,877	794,659	6,981,308	59
60	5,436	71,038	756,313	68,320	720,782	6,223,588	60
61	5,178	65,602	685,275	63,013	652,462	5,536,966	61
62	4,909	60,424	619,673	57,969	589,449	4,916,011	62
63	4,632	55,515	559,249	53,199	531,480	4,355,547	63
64	4,352	50,883	503,734	48,707	478,281	3,850,667	64
65	4,072	46,531	452,851	44,495	429,574	3,396,740	65
66	3,806	42,459	406,320	40,556	385,079	2,989,414	66
67	3,539	38,653	363,861	36,883	344,523	2,624,613	67
68	3,276	35,114	325,208	33,476	307,640	2,298,532	68
69	3,023	31,838	290,094	30,326	274,164	2,007,680	69
70	2,779	28,815	258,256	27,425	243,838	1,748,629	70
71	2,548	26,036	229,441	24,762	216,413	1,518,504	71
72	2,331	23,488	203,405	22,322	191,651	1,314,472	72
73	2,127	21,157	179,917	20,093	169,329	1,133,982	73
74	1,939	19,030	158,760	18,060	149,236	974,700	74
75	1,765	17,091	139,730	16,208	131,176	834,494	75
76	1,606	15,326	122,639	14,523	114,968	711,422	76
77	1,460	13,720	107,313	12,990	100,445	603,716	77
78	1,327	12,260	93,593	11,596	87,455	509,766	78
79	1,204	10,933	81,333	10,331	75,859	428,109	79
80	1,092	9,729	70,400	9,183	65,528	357,416	80
81	990	8,637	60,671	8,142	56,345	296,480	81
82	897	7,647	52,034	7,198	48,203	244,206	82
83	812	6,750	44,387	6,344	41,005	199,602	83
84	734	5,938	37,637	5,571	34,661	161,769	84
85	663	5,204	31,699	4,872	29,090	129,894	85
86	608	4,541	26,495	4,237	24,218	103,240	86
87	553	3,933	21 954	3,656	19,981	81,141	87
88	500	3,380	18,021	3,130	16,325	62,988	88
89	448	2,880	14,641	2,656	13,195	48,228	89
90	399	2,432	11,761	2,232	10,539	36,361	90
91	351	2,033	9,329	1,857	8,307	26,938	91
92	306	1,682	7,296	1,529	6,450	19,560	92
93	265	1,376	5,614	1,243	4,921	13,875	93
94	225	1,111	4,238	998	3,678	9,576	94
95	191	886	3,127	790	2,680	6,397	95
96	168	695	2,241	611	1,890	4,112	96
97	145	527	1,546	454	1,279	2,528	97
98	119	382	1,019	322	825	1,476	98
99	94	263	637	216	503	812	99
100	68	169	374	135	287	417	100
101	45	101	205	78	152	198	101
102	28	56	104	42	74	85	102
103	16	28	48	20	32	32	103
104	7	12	20	8	12	10	104
105	3	5	8	3	4	2	105
106	1	2	3	1	1	0	106
107	1	1	1	0	0	0	107

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—FEMALES

l_x, Q_x, Y_x *and their* Logarithms

Age (x)	l_x	Q_x	Y_x	λl_x	λQ_x	λY_x	Age (x)
0	491,224	14,498,931	371,671,736	5 6912795	7·1613359	8 5701596	0
1	411,646	14,048 371	357,398,085	5 6145237	7 1476260	8 5531522	1
2	387,858	13,648,711	343,549,544	5 5886723	7 1350916	8 5359894	2
3	371,552	13,269,053	330,090,662	5 5700196	7 1228399	8 5186333	3
4	357,824	12,904,398	317,003,937	5 5536697	7 1107378	8 5010647	4
5	346,511	12,552,250	304,275,613	5·5397177	7 0987215	8 4832672	5
6	337,367	12,210,313	291,894,332	5·5281032	7 0867269	8 4652257	6
7	330,094	11,876,578	279,850,887	5 5186380	7 0746913	8 4469267	7
8	324,365	11,549,352	268,137,922	5 5110345	7 0625576	8 4283582	8
9	319,841	11,227,268	256,749,612	5 5049338	7 0502740	8 4095098	9
10	316,180	10,909,251	245,681,353	5 4999345	7 0377949	8 3903722	10
11	313,055	10,594,628	234,929,414	5 4956210	7 0250857	8 3709375	11
12	310,163	10,283,019	224,490,591	5 4915897	7 0121206	8 3511982	12
13	307,240	9,974,318	214,361,923	5 4874783	6 9988831	8 3311476	13
14	304,086	9,668,655	204,540,437	5 4829960	6 9853661	8 3107792	14
15	300,573	9,366,326	195,022,947	5 4779495	6·9715693	8 2900857	15
16	296,668	9,067,706	185,805,931	5 4722714	6 9571974	8 2690596	16
17	292,448	8,773,118	176,885,504	5 4660486	6 9431855	8 2476922	17
18	288,173	8,482,838	168,257,511	5 4596540	6 9285411	8 2259745	18
19	283,813	8,196,845	159,917,670	5·4530323	6 9136467	8 2038964	19
20	279,346	7,915,266	151,861,615	5 4461424	6 8984655	8 1814481	20
21	274,762	7,638,212	144,084,876	5 1389561	6 8829917	8 1586183	21
22	270,058	7,365,802	136,582,869	5 4314568	6 8672200	8 1353963	22
23	265,240	7,098,153	129,350,892	5 4236382	6 8511454	8 1117694	23
24	260,317	6,835,375	122,384,128	5 4155080	6 8347623	8 0877251	24
25	255,306	6 577,564	115,677,659	5 4070612	6 8180652	8 0632495	25
26	250,224	6,324,799	109,226,478	5 3983292	6 8010467	8 0383279	26
27	245,093	6,077,141	103,025,508	5 3893316	6 7836993	8 0129447	27
28	239,934	5,834,628	97,069,624	5 3800923	6 7660132	7 9870833	28
29	234,767	5,597,278	91,353,671	5 3706375	6 7479769	7 9607260	29
30	229,612	5,365,089	85,872,488	5 3609945	6 7293769	7 9338536	30
31	224,486	5,138,040	80,620,924	5 3511902	6 7107975	7 9064478	31
32	219,407	4,916,094	75,593,857	5 3412502	6 6916201	7 8784865	32
33	214,386	4,699,198	70,786,211	5 3311964	6 6720237	7·8199487	33
34	209,434	4,487,288	66,192,968	5 3210470	6 6519840	7 8208579	34
35	204,557	4,280,293	61,809,178	5 3108142	6 6314736	7 7910530	35
36	199,758	4,078,136	57,629,964	5 3005035	6 6104617	7 7606483	36
37	195,036	3,880,739	53,650,527	5 2901137	6 5889145	7 7295740	37
38	190,385	3,688,029	49,866,143	5 2796321	6 5667944	7 6978058	38
39	185,795	3,499,939	46,272,159	5 2690347	6 5440605	7 6653198	39
40	181,253	3,316,415	42,863,982	5 2582852	6 5206689	7·6320925	40
41	176,739	3,137,419	39,637,065	5·2473335	6 4965725	7 5981015	41
42	172,232	2,962,934	36,586,889	5 2361145	6 4717220	7 5633255	42
43	167,705	2,792,966	33,708,939	5 2245465	6 4460656	7·5277451	43
44	163,129	2,627,549	30,998,682	5 2125300	6 4195508	7 4913432	44
45	158,470	2,466,750	28,451,533	5 1999464	6 3921251	7 4547092	45
46	153,694	2,310,668	26,062,824	5 1866567	6 3637876	7 4160215	46
47	148,763	2,159,140	23,827,770	5 1724955	6 3343411	7 3770834	47
48	143,642	2,013,238	21,711,431	5 1572807	6 3038951	7 3372881	48
49	138,295	1,872,270	19,798,677	5 1408059	6 2723684	7 2966362	49
50	132,690	1,736,778	17,994,153	5 1228396	6 2397443	7 2551314	50
51	126,801	1,607,033	16,322,218	5 1031232	6 2060248	7 2127800	51
52	120,651	1,483,307	14,777,078	5·0815293	6 1712310	7 1695886	52
53	114,319	1,365,822	13,352,514	5·0581196	6 1353941	7 1255631	53
54	107,885	1,254,720	12,042,243	5 0329632	6 0985468	7 0807063	54

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

Yearly Table—Females.

l_x, Q_x, Y_x *and their* Logarithms.

Age (x)	l_x	Q_x	Y_x	λl_x	λQ_x	λY_x	Age (x)
55	101,423	1,150,066	10,839,850	5·0061356	6·0607227	7·0350233	55
56	94,998	1,051,856	9,738,889	4·9777166	6·0219564	6·9885094	56
57	88,721	959,997	8,732,963	4·9480271	5·9822699	6·9411616	57
58	82,619	874,327	7,815,801	4·9170783	5·9416739	6·8929735	58
59	76,717	794,659	6,981,308	4·8848906	5·9001809	6·8439368	59
60	71,038	720,782	6,223,588	4·8514924	5·8578039	6·7940409	60
61	65,602	652,492	5,536,966	4·8169190	5·8145552	6·7432719	61
62	60,424	589,419	4,916,011	4·7812111	5·7704463	6·6916129	62
63	55,515	531,480	4,355,547	4·7444134	5·7254869	6·6390427	63
64	50,883	478,281	3,850,667	4·7065736	5·6796831	6·5855359	64
65	46,531	429,574	3,396,740	4·6677410	5·6330380	6·5300623	65
66	42,459	385,079	2,989,414	4·6279653	5·5855499	6·4755861	66
67	38,653	344,523	2,624,613	4·5871863	5·5372182	6·4180653	67
68	35,114	307,640	2,298,532	4·5454877	5·4880428	6·3614506	68
69	31,838	274,164	2,007,680	4·5029448	5·4380104	6·3026837	69
70	28,815	243,838	1,748,629	4·4596230	5·3871013	6·2426977	70
71	26,036	216,413	1,518,504	4·4155767	5·3352833	6·1814159	71
72	23,488	191,651	1,314,472	4·3708475	5·2825111	6·1187514	72
73	21,157	169,329	1,133,982	4·3254636	5·2287313	6·0546062	73
74	19,030	149,236	974,700	4·2794380	5·1738737	5·9888710	74
75	17,091	131,176	834,494	4·2327677	5·1178544	5·9214232	75
76	15,326	114,968	711,422	4·1854318	5·0605770	5·8521278	76
77	13,720	100,445	603,716	4·1373493	5·0019285	5·7808325	77
78	12,260	87,455	509,766	4·0884731	4·9417846	5·7073709	78
79	10,933	75,859	428,109	4·0387393	4·8800071	5·6315461	79
80	9,729	65,528	357,416	3·9880666	4·8164269	5·5531740	80
81	8,637	56,345	296,480	3·9363545	4·7508554	5·4719954	81
82	7,647	48,203	244,206	3·8834820	4·6830741	5·3877564	82
83	6,750	41,005	199,602	3·8293068	4·6128368	5·3001649	83
84	5,938	34,661	161,769	3·7736636	4·5398411	5·2088953	84
85	5,204	29,090	129,894	3·7163630	4·4637437	5·1135991	85
86	4,541	24,218	103,240	3·6571900	4·3841383	5·0138480	86
87	3,933	19,981	81,141	3·5947773	4·3006172	4·9092404	87
88	3,380	16,925	62,988	3·5289263	4·2128592	4·7992578	88
89	2,880	13,195	48,228	3·4594042	4·1204094	4·6832993	89
90	2,432	10,539	36,361	3·3859406	4·0227994	4·5606358	90
91	2,033	8,307	26,938	3·3082256	3·9194442	4·4303653	91
92	1,682	6,450	19,560	3·2259097	3·8095597	4·2913689	92
93	1,376	4,921	13,875	3·1386004	3·6920584	4·1422330	93
94	1,111	3,678	9,576	3·0458630	3·5656117	3·9811841	94
95	886	2,680	6,397	2·9472185	3·4281348	3·8059764	95
96	695	1,890	4,112	2·8421423	3·2764618	3·6140531	96
97	527	1,279	2,528	2·7215324	3·1068705	3·4027771	97
98	382	825	1,476	2·5818727	2·9164539	3·1690864	98
99	263	503	812	2·4191791	2·7015680	2·9095560	99
100	169	287	417	2·2289731	2·4578819	2·6201361	100
101	101	152	198	2·0062549	2·1818436	2·2966652	101
102	56	74	85	1·7454776	1·8692317	1·9294189	102
103	28	32	32	1·4405198	1·5051500	1·5051500	103
104	12	12	10	1·0846595	1·0791812	1·0000000	104
105	5	4	2	0·6705476	0·6020600	0·3010300	105
106	2	1	0	0·1901810	·0000000	...	106
107	1	0	0	·0000000		...	107

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY

Yearly Table—Males and Females.

Mortality of Males and Females.

Age (x).	Annual mortality per cent. at the age (x).		Males and females living at the age (x) to one death annually.		The living of the age (x) and upwards to one death annually.		Age (x).
	Males.	Females.	Males	Females.	Males.	Females.	
0	19·807	17·662	5	6	28·72	29·52	0
1	6 626	5·952	15	17	33·91	34·13	1
2	4·281	4·295	23	23	35·17	35·19	2
3	3·673	3 765	27	27	35·77	35·71	3
4	3 077	3 213	32	31	36 09	36·06	4
5	2·522	2·674	40	37	36·20	36·22	5
6	2 027	2 179	49	46	36·03	36·19	6
7	1·611	1·751	62	57	35·76	35·98	7
8	1·282	1·405	78	71	35·42	35·61	8
9	1·046	1·152	96	87	34·87	35 10	9
10	·901	·993	111	101	34·23	34·50	10
11	·838	·928	119	108	33 53	33·84	11
12	·847	·947	118	106	32·81	33·15	12
13	·866	1·032	115	97	32·09	32·46	13
14	·927	1·162	108	86	31·36	31·80	14
15	1·017	1·308	98	76	30·65	31·16	15
16	1 122	1·433	89	70	29·96	30·56	16
17	1·183	1·473	84	68	29·29	30·00	17
18	1·256	1 525	80	66	28·63	29·44	18
19	1 336	1·586	84	63	27·99	28·88	19
20	1·422	1 655	70	60	27·36	28·33	20
21	1·511	1·727	66	58	26·74	27·80	21
22	1·602	1·800	62	56	26 14	27·27	22
23	1·693	1·873	59	53	25·55	26·76	23
24	1·783	1 944	56	51	24·98	26·26	24
25	1·871	2·011	53	50	24·42	25 76	25
26	1·955	2·072	51	48	23·87	25 28	26
27	2·035	2 127	49	47	23·34	24·80	27
28	2 112	2·177	47	46	22·81	24·32	28
29	2·185	2·220	46	45	22·28	23·84	29
30	2·256	2·258	44	44	21·76	23·37	30
31	2 323	2·286	43	44	21·25	22·89	31
32	2·387	2 315	42	43	20·74	22·41	32
33	2·451	2·337	41	43	20·23	21·92	33
34	2 515	2 356	40	42	19·71	21·43	34
35	2 580	2·374	39	42	19·20	20·92	35
36	2·644	2 392	38	42	18·69	20·42	36
37	2 715	2 413	37	41	18·18	19·90	37
38	2·792	2·440	36	41	17·67	19·37	38
39	2·879	2 475	35	40	17·16	18·84	39
40	2·979	2·522	34	40	16·64	18·30	40
41	3·095	2·583	32	39	16 13	17·75	41
42	3·230	2·663	31	37	15·62	17·20	42
43	3·388	2 766	29	36	15·12	16·65	43
44	3·573	2 897	28	34	14·62	16·11	44
45	3·789	3·060	26	33	14·13	15·57	45
46	4 035	3·261	25	31	13·66	15·03	46
47	4·319	3·503	23	28	13·20	14·52	47
48	4·646	3 793	21	26	12·76	14·02	48
49	5·021	4·137	20	24	12·35	13·54	49

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—MALES AND FEMALES.

Mortality of Males and Females.

Age (x).	Annual mortality per cent. at the age (x).		Males and females living at the age (x) to one death annually.		The living of the age (x) and upwards to one death annually.		Age (x)
	Males.	Females.	Males.	Females.	Males.	Females	
50	5·450	4·539	18	22	11·96	13·09	50
51	5·942	4·971	17	20	11·60	12·67	51
52	6·404	5 389	16	19	11·28	12·29	52
53	6·836	5·791	15	17	10·99	11·95	53
54	7·240	6·175	14	16	10·73	11·63	54
55	7·615	6·542	13	15	10·50	11·34	55
56	7·930	6 833	13	15	10·29	11·07	56
57	8·229	7·123	12	14	10·10	10·82	57
58	8·510	7·408	12	13	9·93	10·58	58
59	8·770	7·687	11	13	9·77	10·36	59
60	9·014	7·957	11	13	9·61	10·15	60
61	9 237	8·217	11	12	9·48	9·95	61
62	9·446	8 467	11	12	9·34	9·75	62
63	9·637	8·707	10	11	9·22	9·57	63
64	9·810	8 935	10	11	9·10	9·40	64
65	9·969	9·152	10	11	8·99	9·23	65
66	10·138	9 385	10	11	8 88	9 07	66
67	10·295	9·595	10	10	8·78	8·91	67
68	10·433	9·786	10	10	8·68	8·76	68
69	10·566	9·968	9	10	8·58	8 61	69
70	10·673	10·133	9	10	8·45	8·46	70
71	10·773	10·290	9	10	8·38	8·31	71
72	10 855	10·446	9	10	8·28	8 16	72
73	10·925	10·588	9	9	8·17	8·00	73
74	10·981	10·734	9	9	8·05	7·84	74
75	11·018	10·890	9	9	7·93	7·67	75
76	11·107	11·058	9	9	7·80	7·50	76
77	11·216	11·239	9	9	7 66	7 32	77
78	11·316	11·444	9	9	7·51	7·13	78
79	11·456	11·654	9	9	7 35	6·94	79
80	11·578	11·892	9	8	7·15	6·73	80
81	11·744	12·159	8	8	7·00	6·52	81
82	11·920	12·462	8	8	6·81	6·30	82
83	12·135	12·799	8	8	6·61	6·07	83
84	12·374	13·175	8	8	6·40	5·84	84
85	12·652	13·608	8	7	6·18	5·59	85
86	13·040	14·350	8	7	5·95	5·33	86
87	13·423	15·126	7	7	5·71	5 08	87
88	13·875	15·974	7	6	5·46	4·83	88
89	14·416	16·867	7	6	5·20	4·58	89
90	15·035	17·876	7	6	4·93	4·33	90
91	15·774	18·901	6	5	4·65	4·08	91
92	16·459	20·013	6	5	4·36	3·83	92
93	17·363	21 319	6	5	4·05	3·58	93
94	18·315	22·545	5	4	3·73	3·31	94
95	19·385	24·177	5	4	3·38	3·03	95
96	22·920	27 496	4	4	3·00	2·72	96
97	27·153	31·938	4	3	2·64	2·43	97
98	32 493	36·957	3	3	2·32	2·16	98
99	38·701	43 519	3	2	2·02	1·92	99
100	46·703	50·370	2	2	1·76	1·69	100

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—MALES.

The **Mean Afterlifetime** *(or the expectation of Life) of* **Males** *of the Age x and of* **Males** *of the Age x and upwards ; also the* **Mean Ages of the Living** *and the* **Mean Age at Death.**

Age (or past life-time)	Mean afterlife-time of males of the age x.	Mean afterlife-time of males of the age x and upwards.	Mean age of males living of the age x and upwards	Mean age at death		Age or past life-time
				Of males actually living at the age x.	Of males actually living at the age x and upwards.	
(x)	$E_x = \frac{Q_x}{l_x}$	$E'_x = \frac{Y_x}{Q_x}$	$x + E'_x$	$x + E_x$	$x + 2\,E'_x$	(x)
0	28 72	25 03	25·03	28 72	50·06	0
1	33·91	24·83	25·83	34 91	50·66	1
2	35·17	24·60	26·60	37·17	51·20	2
3	35·77	24·23	27 23	38 77	51·46	3
4	36·09	23·90	27·90	40·09	51·80	4
5	36·20	23·56	28 56	41·20	52·12	5
6	36 03	23 26	29·26	42 03	52·52	6
7	35·76	22·90	29·90	42·76	52·80	7
8	35·42	22 48	30 48	43·42	52·96	8
9	34·87	22 12	31·12	43·87	53 24	9
10	34 23	21·75	31 75	44·23	53·50	10
11	33·53	21·39	32·39	44·53	53 78	11
12	32·81	21·03	33·03	44·81	54·06	12
13	32·09	20·67	33·67	45·09	54·34	13
14	31·36	20·32	34·32	45 36	54·64	14
15	30·65	19·97	34·97	45 65	54·94	15
16	29·96	19·62	35 62	45·96	55·24	16
17	29·29	19·28	36·28	46·29	55 56	17
18	28·63	18·94	36·94	46·63	55·88	18
19	27·99	18 60	37·60	46·99	56 20	19
20	27 36	18·27	38·27	47·36	56·54	20
21	26 74	17·93	38·93	47·74	56·86	21
22	26·14	17·61	39·61	48·14	57·22	22
23	25 55	17 28	40·28	48·55	57·56	23
24	24·98	16 96	40 96	48 98	57 92	24
25	24·42	16·64	41·64	49·42	58·28	25
26	23·87	16·32	42·32	49·87	58·64	26
27	23·34	16·01	43·01	50·34	59·02	27
28	22·81	15·69	43·69	50·81	59·38	28
29	22·28	15·38	44·38	51·28	59 76	29
30	21·76	15 07	45·07	51·76	60 14	30
31	21·25	14·77	45·77	52 25	60·54	31
32	20·74	14·46	46·46	52·74	60·92	32
33	20 23	14·16	47·16	53·23	61·32	33
34	19·71	13·86	47·86	53·71	61·72	34
35	19·20	13·57	48·57	54·20	62·14	35
36	18·69	13·28	49·28	54·69	62·56	36
37	18·18	12·99	49·99	55·18	62·98	37
38	17·67	12·70	50·70	55·67	63·40	38
39	17·16	12·42	51·42	56·16	63·84	39
40	16·64	12·15	52·15	56·64	64·30	40
41	16·13	11·89	52·89	57·13	64 78	41
42	15·62	11·63	53·63	57·62	65·26	42
43	15·12	11·38	54·38	58 12	65 76	43
44	14·62	11·13	55·13	58 62	66·26	44
45	14·13	10·90	55·90	59 13	66·80	45
46	13·66	10·67	56·67	59·66	67·34	46
47	13 20	10·46	57·46	60·20	67 92	47
48	12·76	10·26	58 26	60 76	68·52	48
49	12·35	10·07	59·07	61 35	69·14	49

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—MALES.

The **Mean Afterlifetime** *(or the expectation of Life) of* **Males** *of the Age x and of* **Males** *of the Age x and upwards; also the* **Mean Ages of the Living** *and the* **Mean Age at Death.**

Age (or past life-time).	**Mean afterlife-time of males of the age** x.	**Mean afterlife-time of males of the age** x **and upwards.**	**Mean age of males living of the age** x **and upwards.**	**Mean age at death**		**Age** or past life-time.
				Of males actually living at the age x.	**Of males actually living at the age** x **and upwards.**	
(x)	$E_x = \frac{Q_x}{l_x}$	$E'_x = \frac{Y_x}{Q_x}$	$x + E'_x$	$x + E_x$	$x + 2\,E'_x$	(x)
50	11·96	9·89	59·89	61·96	69·78	50
51	11·60	9·72	60·72	62·60	70·44	51
52	11·28	9·56	61·56	63·28	71·12	52
53	10·99	9·41	62·41	63·99	71·82	53
54	10·73	9·28	63·28	64·73	72·56	54
55	10·50	9·14	64·14	65·50	73·28	55
56	10·29	9·01	65·01	66·29	74·02	56
57	10·10	8·89	65·89	67·10	74·78	57
58	9·93	8·77	66·77	67·93	75·54	58
59	9·77	8·66	67·66	68·77	76·32	59
60	9·61	8·55	68·55	69·61	77·10	60
61	9·48	8·44	69·44	70·48	77·88	61
62	9·34	8·33	70·33	71·34	78·66	62
63	9·22	8·22	71·22	72·22	79·44	63
64	9·10	8·11	72·11	73·10	80·22	64
65	8·99	8·00	73·00	73·99	81·00	65
66	8·88	7·89	73·89	74·88	81·78	66
67	8·78	7·77	74·77	75·78	82·54	67
68	8·68	7·66	75·66	76 68	83·32	68
69	8·58	7·54	76·54	77·58	84·08	69
70	8·48	7·41	77·41	78·48	84·82	70
71	8·38	7·28	78·28	79·38	85·56	71
72	8·28	7·15	79·15	80·28	86·30	72
73	8·17	7·01	80 01	81·17	87·02	73
74	8·05	6·87	80·87	82·05	87·74	74
75	7·93	6·71	81·71	82·93	88·42	75
76	7·80	6·56	82·56	83·80	89·12	76
77	7·66	6 39	83·39	84·66	89·78	77
78	7·51	6·23	84·23	85·51	90·46	78
79	7·35	6·05	85·05	86·35	91·10	79
80	7·15	5·89	85·89	87·15	91·78	80
81	7·00	5·69	86·69	88·00	92·38	81
82	6·81	5·50	87·50	88·81	93·00	82
83	6·61	5·30	88·30	89·61	93·60	83
84	6·40	5·10	89 10	90·40	94·20	84
85	6·18	4·90	89·90	91·18	94·80	85
86	5·95	4·68	90·68	91·95	95·36	86
87	5·71	4·46	91·46	92·71	95·92	87
88	5·46	4·24	92·24	93·46	96·48	88
89	5·20	4·01	93·01	94·20	97·02	89
90	4·93	3 78	93·78	94·93	97·56	90
91	4·65	3·54	94·54	95·65	98·08	91
92	4·36	3 30	95·30	96·36	98·60	92
93	4·05	3·05	96·05	97·05	99·10	93
94	3·73	2·80	96·80	97·73	99·60	94
95	3·38	2·55	97·55	98·38	100·10	95
96	3·00	2·30	98·30	99·00	100·60	96
97	2·64	2·07	99·07	99·64	101·14	97
98	2·32	1·86	99·86	100·32	101·72	98
99	2·02	1·66	100 66	101·02	102·32	99
100	1·76	1·47	101·47	101·76	102·94	100

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

Yearly Table—Females.

The **Mean Afterlifetime** *(or the expectation of Life) of* **Females** *of the Age x and of* **Females** *of the Age x and upwards ; also the* **Mean Ages of the Living** *and the* **Mean Age at Death.**

Age (or past life-time).	Mean afterlife-time of females of the age x.	Mean afterlife-time of females of the age x and upwards.	Mean age of females living of the age x and upwards.	Mean age at death		Age (or past life-time).
				Of females actually living at the age x.	Of females actually living at the age x and upwards.	
(x)	$E_x = \frac{Q_x}{l_x}$	$E'_x = \frac{Y_x}{Q_x}$	$x + E'_x$	$x + E_x$	$x + 2\,E'_x$	(x)
0	29·52	25·63	25·63	29·52	51·26	0
1	34·13	25·44	26·44	35·13	51·88	1
2	35·19	25·17	27·17	37·19	52·34	2
3	35·71	24·88	27·88	38·71	52·76	3
4	36·06	24·56	28·56	40·06	53·12	4
5	36·22	24·24	29·24	41·22	53·48	5
6	36·19	23·90	29·90	42·19	53·80	6
7	35·98	23·56	30·56	42·98	54·12	7
8	35·61	23·22	31·22	43·61	54·44	8
9	35·10	22·87	31·87	44·10	54·74	9
10	34·50	22·52	32·52	44·50	55·04	10
11	33·84	22·17	33·17	44·84	55·34	11
12	33·15	21·83	33·83	45·15	55·66	12
13	32·46	21·49	34·49	45·46	55·98	13
14	31·80	21·15	35·15	45·80	56·30	14
15	31·16	20·82	35·82	46·16	56·64	15
16	30·56	20·49	36·49	46·56	56·98	16
17	30·00	20·16	37·16	47·00	57·32	17
18	29·44	19·83	37·83	47·44	57·66	18
19	28·88	19·51	38·51	47·88	58·02	19
20	28·33	19·18	39·18	48·33	58·36	20
21	27·80	18·86	39·86	48·80	58·72	21
22	27·27	18·54	40·54	49·27	59·08	22
23	26·76	18·22	41·22	49·76	59·44	23
24	26·26	17·90	41·90	50·26	59·80	24
25	25·76	17·59	42·59	50·76	60·18	25
26	25·28	17·27	43·27	51·28	60·54	26
27	24·80	16·95	43·95	51·80	60·90	27
28	24·32	16·64	44·64	52·32	61·28	28
29	23·84	16·32	45·32	52·84	61·64	29
30	23·37	16·00	46·00	53·37	62·00	30
31	22·89	15·69	46·69	53·89	62·38	31
32	22·41	15·38	47·38	54·41	62·76	32
33	21·92	15·06	48·06	54·92	63·12	33
34	21·43	14·75	48·75	55·43	63·50	34
35	20·92	14·44	49·44	55·92	63·88	35
36	20·42	14·13	50·13	56·42	64·26	36
37	19·90	13·82	50·82	56·90	64·64	37
38	19·37	13·52	51·52	57·37	65·04	38
39	18·84	13·22	52·22	57·84	65·44	39
40	18·30	12·92	52·92	58·30	65·84	40
41	17·75	12·63	53·63	58·75	66·26	41
42	17·20	12·35	54·35	59·20	66·70	42
43	16·65	12·06	55·06	59·65	67·12	43
44	16·11	11·80	55·80	60·11	67·60	44
45	15·57	11·55	56·55	60·57	68·10	45
46	15·03	11·28	57·28	61·03	68·56	46
47	14·52	11·03	58·03	61·52	69·06	47
48	14·02	10·80	58·80	62·02	69·60	48
49	13·54	10·57	59·57	62·54	70·14	49

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

YEARLY TABLE—FEMALES.

The **Mean Afterlifetime** (*or the expectation of Life*) *of* **Females** *of the Age x and of* **Females** *of the Age x and upwards; also the* **Mean Ages of the Living** *and the* **Mean Age at Death.**

Age (or past life-time).	**Mean afterlife-time of females of the age x.**	**Mean afterlife-time of females of the age x and upwards.**	**Mean age of females living of the age x and upwards.**	**Mean age at death**		**Age** (or past life-time).
				Of females actually living at the age x.	**Of females actually living at the age x and upwards.**	
(x)	$E_x = \frac{Q_x}{l_x}$	$E'_x = \frac{Y_x}{Q_x}$	$x + E'_x$	$x + E_x$	$x + 2\,E'_x$	(x)
50	13·09	10·36	60·36	63·09	70·72	50
51	12·67	10·16	61 16	63·67	71·32	51
52	12·29	9·96	61·96	64·29	71·92	52
53	11·95	9·78	62·78	64·95	72·56	53
54	11·63	9·60	63·60	65·63	73·20	54
55	11·34	9·42	64·42	66·34	73·84	55
56	11·07	9·26	65·26	67·07	74·52	56
57	10·82	9·10	66·10	67·82	75·20	57
58	10·58	8·94	66·94	68·58	75·88	58
59	10·36	8·78	67·78	69·36	76·56	59
60	10·15	8·63	68·63	70·15	77·26	60
61	9·95	8·49	69·49	70·95	77·98	61
62	9·75	8·34	70·34	71·75	78·68	62
63	9·57	8·19	71·19	72·57	79·38	63
64	9·40	8·05	72·05	73·40	80·10	64
65	9·23	7·89	72·89	74·23	80·78	65
66	9·07	7·76	73·76	75·07	81·52	66
67	8·91	7·60	74·60	75·91	82·20	67
68	8·76	7·47	75·47	76·76	82·94	68
69	8·61	7·32	76·32	77·61	83·64	69
70	8·46	7·17	77·17	78·46	84·34	70
71	8·31	7·02	78·02	79·31	85·04	71
72	8·16	6·86	78·86	80·16	85·72	72
73	8·00	6·70	79·70	81·00	86·40	73
74	7·84	6·53	80·53	81·84	87·06	74
75	7·67	6·36	81·36	82·67	87·72	75
76	7·50	6·19	82·19	83·50	88·38	76
77	7·32	6·01	83·01	84·32	89·02	77
78	7·13	5·83	83·83	85·13	89·66	78
79	6·94	5·64	84·64	85·94	90·28	79
80	6·73	5·45	85·45	86·73	90·90	80
81	6·52	5·26	86·26	87·52	91·52	81
82	6·30	5·07	87·07	88·30	92·14	82
83	6·07	4·87	87·87	89·07	92·74	83
84	5·84	4·67	88·67	89·84	93·34	84
85	5·59	4·46	89·46	90·59	93·92	85
86	5·33	4·26	90·26	91·33	94·52	86
87	5·08	4·06	91·06	92·08	95·12	87
88	4·83	3·86	91·86	92·83	95·72	88
89	4·58	3·65	92·65	93·58	96·30	89
90	4·33	3·45	93·45	94·33	96·90	90
91	4·08	3·24	94·24	95·08	97·48	91
92	3·83	3·03	95·03	95·83	98·06	92
93	3·58	2·82	95·82	96·58	98·64	93
94	3·31	2·60	96·60	97·31	99·20	94
95	3·03	2·39	97·39	98·03	99·78	95
96	2·72	2·18	98·18	98·72	100·36	96
97	2·43	1·98	98·98	99·13	100·96	97
98	2·16	1·79	99·79	100·16	101·58	98
99	1·92	1·61	100·61	100·92	102·22	99
100	1·69	1·42	101·42	101·69	102·84	100

NATIVE LIFE-TABLE FOR THE MADRAS PRESIDENCY.

Yearly Table.

Logarithms *of the series* $p_x = \lambda$ *of the probability of living one year after age* x.

Males.				Females			
Age (x)	λp_x	Age (x)	λp_x	Age (x)	λp_x	Age (x)	λp_x
0	$\bar{1}$ 9139102	55	$\bar{1}$ 9669160	0	$\bar{1}$ 9232442	55	$\bar{1}$ 9715810
1	$\bar{1}$ 9705513	56	$\bar{1}$ 9655395	1	$\bar{1}$ 9741486	56	$\bar{1}$ 9703105
2	$\bar{1}$ 9814088	57	$\bar{1}$ 9642422	2	$\bar{1}$ 9813473	57	$\bar{1}$ 9690512
3	$\bar{1}$ 9840489	58	$\bar{1}$ 9630218	3	$\bar{1}$ 9836501	58	$\bar{1}$ 9678128
4	$\bar{1}$ 9866354	59	$\bar{1}$ 9618875	4	$\bar{1}$ 9860480	59	$\bar{1}$ 9666018
5	$\bar{1}$ 9890493	60	$\bar{1}$ 9608298	5	$\bar{1}$ 9883855	60	$\bar{1}$ 9654266
6	$\bar{1}$ 9911950	61	$\bar{1}$ 9598504	6	$\bar{1}$ 9905348	61	$\bar{1}$ 9642921
7	$\bar{1}$ 9930035	62	$\bar{1}$ 9589473	7	$\bar{1}$ 9923965	62	$\bar{1}$ 9632023
8	$\bar{1}$ 9944303	63	$\bar{1}$ 9581182	8	$\bar{1}$ 9938993	63	$\bar{1}$ 9621602
9	$\bar{1}$ 9954570	64	$\bar{1}$ 9573598	9	$\bar{1}$ 9950007	64	$\bar{1}$ 9611674
10	$\bar{1}$ 9960896	65	$\bar{1}$ 9566683	10	$\bar{1}$ 9956865	65	$\bar{1}$ 9602243
11	$\bar{1}$ 9963599	66	$\bar{1}$ 9559334	11	$\bar{1}$ 9959687	66	$\bar{1}$ 9592210
12	$\bar{1}$ 9963236	67	$\bar{1}$ 9552559	12	$\bar{1}$ 9958886	67	$\bar{1}$ 9583014
13	$\bar{1}$ 9962861	68	$\bar{1}$ 9546386	13	$\bar{1}$ 9955177	68	$\bar{1}$ 9574571
14	$\bar{1}$ 9959740	69	$\bar{1}$ 9540837	14	$\bar{1}$ 9949535	69	$\bar{1}$ 9566782
15	$\bar{1}$ 9955813	70	$\bar{1}$ 9535927	15	$\bar{1}$ 9943219	70	$\bar{1}$ 9559537
16	$\bar{1}$·9951279	71	$\bar{1}$ 9531659	16	$\bar{1}$ 9937772	71	$\bar{1}$ 9552708
17	$\bar{1}$ 9948591	72	$\bar{1}$ 9528040	17	$\bar{1}$ 9936054	72	$\bar{1}$ 9546161
18	$\bar{1}$ 9946451	73	$\bar{1}$·9525063	18	$\bar{1}$ 9933783	73	$\bar{1}$ 9539744
19	$\bar{1}$·9941971	74	$\bar{1}$ 9522714	19	$\bar{1}$ 9931101	74	$\bar{1}$ 9533297
20	$\bar{1}$ 9938248	75	$\bar{1}$ 9520976	20	$\bar{1}$ 9928137	75	$\bar{1}$ 9526641
21	$\bar{1}$ 9934374	76	$\bar{1}$ 9516941	21	$\bar{1}$ 9925007	76	$\bar{1}$ 9519175
22	$\bar{1}$ 9930425	77	$\bar{1}$ 9512590	22	$\bar{1}$ 9921814	77	$\bar{1}$ 9511238
23	$\bar{1}$ 9926468	78	$\bar{1}$ 9507794	23	$\bar{1}$ 9918648	78	$\bar{1}$ 9502662
24	$\bar{1}$ 9922560	79	$\bar{1}$ 9502423	24	$\bar{1}$ 9915582	79	$\bar{1}$ 9493273
25	$\bar{1}$ 9918746	80	$\bar{1}$ 9496336	25	$\bar{1}$ 9912680	80	$\bar{1}$ 9482879
26	$\bar{1}$ 9915106	81	$\bar{1}$ 9489388	26	$\bar{1}$ 9910024	81	$\bar{1}$ 9471275
27	$\bar{1}$ 9911609	82	$\bar{1}$ 9481428	27	$\bar{1}$ 9907607	82	$\bar{1}$ 9458248
28	$\bar{1}$ 9908265	83	$\bar{1}$ 9472297	28	$\bar{1}$ 9905452	83	$\bar{1}$ 9443568
29	$\bar{1}$ 9905077	84	$\bar{1}$ 9461827	29	$\bar{1}$ 9903570	84	$\bar{1}$ 9426994
30	$\bar{1}$ 9902036	85	$\bar{1}$ 9449848	30	$\bar{1}$ 9901957	85	$\bar{1}$ 9408270
31	$\bar{1}$ 9899122	86	$\bar{1}$ 9434303	31	$\bar{1}$ 9900600	86	$\bar{1}$ 9375873
32	$\bar{1}$ 9896304	87	$\bar{1}$ 9416347	32	$\bar{1}$ 9899462	87	$\bar{1}$ 9341490
33	$\bar{1}$ 9893539	88	$\bar{1}$ 9395741	33	$\bar{1}$ 9898506	88	$\bar{1}$ 9304779
34	$\bar{1}$ 9890775	89	$\bar{1}$ 9372284	34	$\bar{1}$ 9897672	89	$\bar{1}$ 9265364
35	$\bar{1}$ 9887949	90	$\bar{1}$ 9345574	35	$\bar{1}$ 9896893	90	$\bar{1}$ 9222852
36	$\bar{1}$ 9885133	91	$\bar{1}$ 9315498	36	$\bar{1}$ 9896102	91	$\bar{1}$ 9176839
37	$\bar{1}$ 9882096	92	$\bar{1}$ 9281738	37	$\bar{1}$ 9895184	92	$\bar{1}$ 9126907
38	$\bar{1}$ 9878741	93	$\bar{1}$ 9244021	38	$\bar{1}$ 9894026	93	$\bar{1}$ 9072626
39	$\bar{1}$ 9874953	94	$\bar{1}$ 9202066	39	$\bar{1}$ 9892505	94	$\bar{1}$ 9013555
40	$\bar{1}$ 9870607	95	$\bar{1}$ 9155583	40	$\bar{1}$ 9890483	95	$\bar{1}$ 8949238
41	$\bar{1}$ 9865570	96	$\bar{1}$ 9005514	41	$\bar{1}$ 9887810	96	$\bar{1}$ 8799901
42	$\bar{1}$ 9859697	97	$\bar{1}$ 8814821	42	$\bar{1}$ 9884320	97	$\bar{1}$ 8603403
43	$\bar{1}$ 9852832	98	$\bar{1}$·8577735	43	$\bar{1}$ 9879835	98	$\bar{1}$ 8378084
44	$\bar{1}$ 9844805	99	$\bar{1}$ 8288148	44	$\bar{1}$ 9874164	99	$\bar{1}$ 8097940
45	$\bar{1}$ 9835441	100	$\bar{1}$ 7939616	45	$\bar{1}$ 9867103	100	$\bar{1}$ 7772810
46	$\bar{1}$ 9824755	101	$\bar{1}$ 7525355	46	$\bar{1}$ 9858388	101	$\bar{1}$ 7392227
47	$\bar{1}$ 9812406	102	$\bar{1}$ 7038245	47	$\bar{1}$ 9847852	102	$\bar{1}$ 6950422
48	$\bar{1}$·9798189	103	$\bar{1}$ 6470831	48	$\bar{1}$ 9835252	103	$\bar{1}$ 6441397
49	$\bar{1}$ 9781882	104	$\bar{1}$ 5815313	49	$\bar{1}$ 9820337	104	$\bar{1}$ 5858881
50	$\bar{1}$ 9763258	105	$\bar{1}$ 5068559	50	$\bar{1}$ 9802836	105	$\bar{1}$ 5196334
51	$\bar{1}$ 9741883			51	$\bar{1}$ 9784061		
52	$\bar{1}$ 9721792			52	$\bar{1}$ 9765903		
53	$\bar{1}$ 9702988			53	$\bar{1}$ 9748486		
54	$\bar{1}$ 9685445			54	$\bar{1}$ 9731724		

APPENDIX B.

An Account of the arrangements for enumerating the People and of the method of abstracting and compiling the Census Returns.

INTRODUCTION.

In order to arrive at a right understanding of the results of the Census and of their value, how far those results are complete, how far they are trustworthy, what exactly each total means,—it is essential to know what the various arrangements were under which the Census was taken and how they were carried out. A record in a convenient form of the rules for the taking of the Census, of the difficulties met with, and of the suggestions tending to obviate difficulties or to render the arrangements more complete or efficient of the various officers charged with the carrying out of the work, are of great importance in view to any future similar operations. I have therefore thought it best to prepare this appendix in some detail, and I have divided it into four parts, of which the first three relate to the arrangements for enumerating the people and the last to the preparation of the returns in the Central Office.

The chronological and the most convenient order in which to treat the first subject is to give, first the general rules under which the Census was taken, and then the reports and suggestions of the district officers relating to their working; but since, necessarily, there must be in the accounts of the district officers much repetition, and it is wearisome for any one not intimately acquainted with the various arrangements to see or understand the bearing of each rule, I have thought it best to prepare a short explanation of the principles on which the rules were based and of their working, and to give separately the opinions and suggestions of the district officers on some important points.

In the *first* part of this appendix therefore will be found the general rules under which the Census was taken as they stood on the Census night—the night of the 17th February 1881.

In the *second* part will be found extracts from the reports of Collectors on several points connected with the operations, as well as their suggestions for the future.

In the *third* part I have given a general sketch of the system or manner of enumerating the people common to all districts and of that followed in the areas specially censused, and of the principles on which that system was based, with my own comments on its working in some instances, and some information illustrating or completing the subject.

In the *fourth* part I have recorded the arrangements and method on which the abstracting and tabulation of the information contained in the schedules prepared at the enumeration was carried out under my own personal supervision.

PART I.

Containing the General Rules under which the Census of 1881 *was taken in the Madras Presidency as they stood at the time of the taking of the Census.*

Paper No. 1.

Extract from a Proceedings of the Board of Revenue, dated 24th March 1880, *No.* 414.

* * * *

2. An Imperial Census Commissioner for the whole of India will be appointed shortly and a Deputy Superintendent for this Presidency about the end of July, when detailed instructions for the conduct of the Census will be issued. Some preliminary steps may, however, be taken in anticipation of the promulgation of a scheme of operations. The first point for consideration is the division of the Presidency into convenient circles in the manner indicated in the circular of the Bengal Government embodied in the first of the orders read above. The Tahsildars' and Deputy Tahsildars' ranges will ordinarily constitute the circles, and they will be responsible for carrying out the arrangements ordered in their respective divisions. These circles must be again sub-divided into convenient ranges for Supervisors and Enumerators. On the occasion of the last Census the number of houses allotted to each Enumerator was left to Collectors, 100 being indicated as a suitable average; one Supervisor was considered sufficient for every twenty Enumerators. This may be taken as a guide in settling the ranges pending the issue of instructions by the Census Commissioner as to the work to be performed by Enumerators, Supervisors, &c. Collectors should lose no time in parcelling out their districts into convenient circles, which should be distinctly marked on sketch maps on a sufficiently large scale to show all the villages and hamlets; tracings from the Survey maps where available would answer the purpose. Great care must be taken that no portion of any district is omitted, and attention to this point will especially be required in districts in which there are extensive hill tracts. The arrangements proposed for taking the Census in the hill tracts of the marginally-noted districts and in the Native States of Banganapalle, Sandúr, and Pudukóta were approved in G.O., dated 21st June 1879, No. 1324. These tracts should also be divided into convenient circles and an officer nominated to superintend operations in each of them. Municipalities, including the town of Madras, may be treated as circles, the duty of making arrangements in them being entrusted to the Commissioners; the town should be sub-divided into convenient sub-circles for Supervisors and Enumerators, and plans prepared showing distinctly the limits of each to guard against the omission of any houses or their inclusion in more than one range.

Ganjam, Vizagapatam, Godávari, Kurnool, Salem, Coimbatore, Nílgiris, Malabar, Canara, Madura, and Tinnevelly.

3 Lists of all villages and hamlets should next be drawn up and carefully examined by the officer appointed to the charge of each circle; detached buildings where travellers ordinarily halt, and places where boats are habitually moored should also be noted to facilitate the final enumeration.

4. Lists of the circles determined upon and of the villages comprised in each should be forwarded to the Board's Office by the end of May.

5. The agency by which the enumeration is to be conducted should also be considered; as far as possible unpaid agency must be employed. The actual enumeration will generally be performed by the village officers, and when additional Enumerators are required the services of any of the principal inhabitants who are qualified and willing to assist may be utilized. All officials in the Revenue Department and such as can be spared for the work in other departments will be available for employment as Enumerators and Supervisors according to their qualifications. As regards the utilization of the Police the Census Committee deprecated their employment generally, and the Government were of opinion that it was not advisable that they should have any part in the enumeration of the ordinary resident population, but saw no objection to their assistance being obtained for the Census of travellers. In the hill tracts and in some of the larger towns it may be necessary to employ paid agency to some extent. It will be well to select an officer for the charge of each circle at once and to draw up lists of persons qualified to act as Supervisors and Enumerators with reference to the number of sub-circles to be provided for, so that there may be no delay when the time comes for the preliminary enumeration.

6. Detailed instructions regarding the preparation of house registers, the numbering of houses, the forms to be used by Enumerators, &c., will be issued in due course.

* * * *

9. The Board request that orders may be issued to all Heads of Departments directing them to afford all the aid in their power, and a circular be addressed to Zemindars of position inviting their co-operation as on the last occasion—*Vide* G.O.s, dated 5th December 1870, No. 1933, and 11th February 1871, No. 184.

Note.—The nomenclature used in this Proceedings and in the general instructions following was subsequently changed. To each *Enumerator* a *block* was assigned, to each *Supervisor* a *circle* of twenty blocks, and to each *Superintendent* a *charge* of a convenient number of circles.

Paper No. II.

General Instructions for the Census of the Madras Presidency to be taken in the early part of February 1881.

1. In taking the next census of the Presidency, which is to be part of a General Imperial Census of the whole of British India, great care and accuracy will be required.

2. A preliminary house-to-house enumeration must be made to prepare for the final census.

3. In Board's Proceedings, dated 24th March 1880, No. 414, Collectors have already been requested to take steps to parcel out the districts into convenient circles and to forward to this office lists of the circles and of the villages comprised in each.

4. Statistics of villages with the number of houses* in them and their area† must then be collected. Every Curnam must be required to submit to the Tahsildar of his taluk a village return showing the following particulars :—

I.—Statistical Return of Houses and Area.

Village—
Taluk—
District—

1. Number of houses in the village				
2. Number of detached houses‡ outside the village-site ...				
3. Other buildings				
4. Total number of houses and other buildings				
				ACRES.
5. Area of Government land— as shown in the Jammabandi accounts of Fasli 1289—Board's Proceedings, No. 1059, dated 30th July 1880.	Assessed.	Occupied		
		Unoccupied		
	Unassessed.	Cultivable		
		Uncultivable, including village-site, roads, &c.		
6. Area of Inam land				
7. Total area				

At the foot of this return must be stated the data on which the estimate of area is based, whether on Curnams' measurements, the pymash, or a professional survey, &c. As regards entire Inam and Zemindari villages it will not be possible to ascertain particulars of area ; it will suffice to give statistics as to houses and the total area. The Government have decided that inquiries into land revenue should be kept distinct from the Census operations—G.O., dated 25th June 1878, No. 961.

5. At the same time a register of buildings in human occupation, houses, schools, shops, temples, mosques, and others must be prepared in the following form :—

II.—List of Buildings in human occupation, Houses, Shops, Temples, Mosques, Schools, and others.

Name of District.	Name of Taluk.	Name of Village and Hamlets comprised in same or Municipal ward.	Number of the Village.	Number of the Building.	Nature of the Building (here enter whether House, Shop, School, Temple, &c.).	Name of Occupant.
1	2	3	4	5	6	7

Foot-note.—In surveyed and settled districts the numbers given to villages by the Survey and Settlement Departments will be entered in Column 4. Elsewhere the villages must be consecutively numbered by the several Tahsildars and the number so given entered in Column 4.

Houses omitted or built after the completion of these returns should be shown in Column 5 of the register under their appropriate number, distinguished by a letter thus : 57 A —Board's Proceedings, dated 10th September 1880, No. 1305.

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* The definition of this term very generally followed was "the dwelling-place of one or more families with their servants having a separate principal entrance from the public way;" but in some districts the definition followed was "a dwelling-house with all the out-houses belonging to it, forming one block, whether occupied by one or more families."

† Area means actual area within the village bounds, including hills and rocky waste—Board's Proceedings, No. 1486, dated 9th October 1880.

‡ Hamlets are not detached houses—Board's Proceedings, dated 28th July 1880, No. 1047. It was also ruled that all houses outside village-site in villages and hamlets, whether such houses stand singly or in small or large groups, should be held to be detached houses—Board's Proceedings, Miscellaneous No. 10362, dated 22nd September 1880

6. As the Curnam enters a house in this register, he must affix the register number to the house-door or in some other prominent place by paint. The numbering must be permanent enough to last till the date of the final enumeration. Houses, shops, temples, &c., which are not tenanted, must be separately distinguished, the last column in the list being left blank. Bazaars used for the day, and stables and out-houses which are not generally used as human habitations, should not be entered in the register. Ruined houses should be omitted; houses fit for habitation, but temporarily vacant, should be included in the list.

7. Both these returns must be prepared by the Curnams as soon as possible, particulars being obtained from the Zemindari Curnams in permanently-settled estates. They must be stitched together lightly with a sheet outside, showing the name of the village, taluk, and district, and the name of the person who has prepared them. Other work must not be allowed to interfere with this duty, and Tahsildars and Divisional Officers must understand that Curnams are not to be withdrawn from their villages till it is done.

8. The village books must be made ready and despatched to the Tahsildar not later than the 1st September 1880.

9. The Tahsildar will carefully examine them to see if they have been correctly prepared. If not, immediate measures must be taken to get any errors rectified. From the Village Statistical Return (Form 1), the Tahsildar will compile a Taluk Statistical Return in the following form:—

III.—Statistical Return of the Villages, Houses, and Area of the Taluk, District.

Circles.	Names of Villages.	Total Area in Acres.	Number of Houses and other Buildings.	Area of Government Land.				Area of Inam Land.	Area of Permanently-settled Estates, Polliems, &c.	Total Area.
				Assessed.		Unassessed.				
				Occupied.*	Unoccupied.	Cultivable.	Uncultivable including Village-sites, Roads, &c.			
1	2	3	4	5	6	7	8	9	10	11
		ACRES.		ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.

It should be noted in the remark column against each village whether it is a Government village, inam, in a permanently-settled estate, polliem, &c.—Circular letter No. 147, dated 27th September 1880.

10. At the end of this Taluk Return must be entered any tracts inhabited by wandering tribes, &c., which are not entered in the Curnams' reports. The area of such tracts is generally unknown, but it may be estimated with some approach to accuracy.

11. In all cases a note must be appended to the return showing how the areas have been ascertained.

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* All land charged under Sovay Jumma as well as that held on putta should be classed under "assessed occupied," but Pérambóke land set apart for public purposes, but cultivated without authority, should appear under "unassessed uncultivable."—Board's Proceedings, No. 1770, dated 20th November 1880.

12. The several Tahsildars should at the same time prepare Supervisor's lists in the form given below and forward copies of the same in duplicate to the Collector. Copies of the Supervisor's lists should also be furnished to the several Supervisors through the Circle Officers:—

List of Villages in Supervisor's Range No. , comprised in the Circle or Taluk of , in the District of

Name with Father's Name, also Occupation of Supervisor.	Villages comprised in Supervisor's Range sub-divided into Enumerators' Blocks* (shown separately for each Village).						Remarks
	Number of the Village.	Name of Village.	Number of Enumerator's Block.	Name with Father's Name, also Occupation of Enumerator.	Number of Buildings as per Form II.		
					Inhabited.	Uninhabited.	
1	2	3	4	5	6	7	8

FOOT-NOTE.—In surveyed and settled districts the numbers given to villages by the Survey and Settlement Departments will be entered in column 2, elsewhere the villages must be consecutively numbered by the several Tahsildars and the numbers so given entered in column 2.

13. The Taluk Returns will, in the case of the largest taluks, take from ten days to a fortnight to compile. They must be all despatched, including the Supervisors' lists in duplicate, through the Divisional Officer to the Collector by the 15th September 1880 with the Village Returns on which they are based. The Village House Registers (No. II) must be separated from the Returns in Form I, to which they have been lightly stitched, and must be retained by the Tahsildar.

14. The Collector, after seeing that the Taluk Returns have been properly compiled, will abstract them Talukwar thus—

IV.—Statistical Return of Taluks, Villages, Houses, and Area.
District.

Names of Taluks.	Number of Circles.	Number of Villages.	Number of Houses and other Buildings.	Area in Square Miles.	Area in Acres.	Area of Government Land.				Area of Inam Land.	Area of Estates paying Peishcush.	Total Area.
						Assessed.		Unassessed.				
						Occupied.	Unoccupied.	Cultivable.	Uncultivable, including Village sites, Roads, &c.			
1	2	3	4	5	6	7	8	9	10	11	12	13

15. In the District Return the Collector must be careful to include any hilly tracts, large zemindaris or independent States which do not appear in the Tahsildar's statements.

16. To this return also must be appended a note showing precisely how the area has been estimated, thus—

	ACRES.
By Survey	
By Carnam's measurements	
By Pymaish	
Mere guess-work, &c.	
Total ...	

* In any future census it should be distinctly laid down that the block is that area, though it be but a single house or a few square yards, assigned to be dealt with by an Enumerator at *the final enumeration*, not at the preliminary one, and that the name and number of a block once fixed in this list should not be again altered. Every Enumerator must have a block, and the name of every block to be dealt with and of every Enumerator to be employed in any capacity at the final census should be shown in this list.

17. The object of these returns is to provide that every portion of the country shall be duly registered and censused. The Tahsildar knowing the area of his taluk, and the Collector the area of his district, will be able to see that the combined village and taluk totals omit no forest land, thinly-peopled tract, hill country, or petty estate.

18. The District Statistical Returns No. IV, together with the Taluk Statements No. III which give the particulars for each village, must be forwarded to the Deputy Superintendent of Census at Madras before the 15th October 1880. The list of villages entered in column 2 of the Statements No. III must correspond both in name and number with the lists of villages submitted under Board's Proceedings, 24th March 1880, No. 414. The original Village Returns (Form No. I) are not required in the Census Office; they may therefore be sent back by the Collector to the Tahsildar—(circular letter of the Deputy Superintendent of Census, No. 54, dated 8th September 1880.) Collectors will also forward to the Board, for the use of the Deputy Superintendent of Census who may be appointed for this Presidency, one out of the two copies, received by them from Tahsildars, of the several Supervisors' lists. In sending these lists Collectors are requested to arrange them in bundles by taluks or circles and to forward with them an abstract showing the number of Supervisors' ranges and Enumerators' blocks.

19. During September and October 1880 every Taluk office should be visited by the Divisional Officers in order that the Registers of Houses may be thoroughly examined. These registers must remain with the Tahsilar until wanted for the enumeration.

20. The preliminary house-to-house enumeration must next be made. It will not be a difficult operation in the greater part of the Presidency, where the houses are all collected in villages, but in some districts, such as Malabar, South Canara, and the Nilgiris, where the houses are often scattered and isolated, special arrangements will have to be made, as was done on the last occasion.

21. The Board will leave it to Collectors to fix the number of houses with which each Enumerator should deal. In villages containing less than 200 houses, the Curnam and Munsif will be the Enumerators, unless in special cases the Collector thinks it necessary to employ other agency. In villages containing more houses, Assistants will have to be appointed. They should be selected from amongst the Mirassidars or officially-recognized chief inhabitants. All officials in the Revenue Department will be available for this work, and their services must be utilized to the utmost. In towns, special arrangements must be made. In Municipalities, the Commissioners will be requested to undertake the Census and superintend the Enumerators, following, as far as possible, the arrangements made on the occasion of the last Census. There should be about one Supervisor to twenty Enumerators. In the rural tracts the Revenue Inspectors will be Supervisors, but as there are not enough of them to perform the duty thoroughly, advantage should be taken of the presence of any European or Native gentleman who understands the nature and value of a Census. There can be few such who will refuse, at the request of the Collector, to supervise the enumeration in their immediate neighbourhood. All Clerks in the offices of Tahsildars and Deputy Tahsildars will be available for this duty. As far as possible unpaid agency must be employed.

22. By the end of October 1880 the Tahsildar must return the House Registers to the Enumerators through the several Circle Officers, and must supply them with the proper number of papers in the following form:—

FORM V.

FORM OF ENUMERATOR'S SCHEDULE.

District, Taluk or Circle, Town or Village

Number of House *Name of Enumerator.**

Serial Number of each Inmate.	Name.	Condition, *i.e.*, whether Married, Unmarried, Widow or Widower.	Sex.	Age last Birth-day.	Religion.	Caste, if Hindu; Sect, if of other religion.†	Mother tongue.	Place of Birth.‡	Occupation of Men, also of Boys and Females who may do work.§	*Education.* 1. Under instruction. 2. Not under instruction, but able to read and write. 3. Not under instruction, and not able to read and write.	*Infirmities.* 1. Unsound mind. 2. Deaf-mutes from birth. 3. Blind. 4. Lepers.
					RELIGION.						
1	2	3	4	5	6	7	8	9	10	11	12

* The name of the Enumerator conducting the final census should alone appear here. The Enumerator making the preliminary census should place his initials at the head of the forms—Circular letter No. 177, dated 30th September 1880.

† In this column such details of tribes, clans, and septs as the Local Government may direct should be introduced.

‡ If a European British subject, add British subject. If a Foreigner, state of what country. If of mixed European and Asiatic parentage, add Eurasian.

§ Boys at school, girls, small children, and women who perform no regular work should not be shown at all under Column 10.

23. The forms will be stitched together in book form, but a few loose forms will also be given.

24. The forms above described, with the exception of the Enumerator's Form No. V, must be printed at the District Presses in diglot in English and the Vernacular of the district. The Enumerator's form will be printed at Madras in diglot in English, Tamil, and Telugu, and Collectors should indent for the required number of these forms as soon as possible. When the Enumerator's forms are required in other languages, such as Uriya, Canarese, and Malayalam, they must be printed at the District Presses by the Collectors concerned.

25. Before the preliminary enumeration begins, the Enumerator will fill in the heading of his forms from the house register prepared in August.

26. The Revenue Inspector and other Supervisors will superintend the Enumerators whilst at work and see that they understand their instructions. Till the 30th of December they will diligently test the entries in the village books sent to them by the Enumerators, and will authenticate the village books in which they have tested 10 per cent. of the returns by their signature. If any Enumerator's work seems to be incorrect, the Revenue Inspector or other Supervisor will report the fact to the Circle officer and require the Enumerators to do it over again.

27. As each village book is tested the Revenue Inspector or other Supervisor will send it to the Circle officer. On the 16th December he will send all the books that remain in his hands to the Circle officer whether they have been tested or not. The Circle officer will himself or by any other agency available test as many as possible of the returns (including some previously untested) received from each Supervisor's division.

28. Before the 20th January 1881 Divisional officers should visit the taluks subordinate to them and examine the village books to see that the forms have been properly and legibly filled up, and that the Supervisors and Enumerators understand their duties. On the 20th January 1881 the Circle officer will send back the village books to the Enumerators with a view to the final enumeration. It is of the utmost importance that this distribution should be complete. By the end of January 1881 the Circle officer must hold written acknowledgments of the receipt of the returns from each Enumerator, and if any are not received, the cause must be immediately ascertained. If by accident any village book is lost at this late stage of the proceedings, the Circle officer himself or some responsible official must proceed to the village concerned and superintend the final enumeration.

29. The Board believe that there are no large festivals at this time of the year which will interfere with the census; but if there are such in any district, the Collector should report the fact at once. No cause whatever must be allowed to interfere with the final enumeration.

30. When the final enumeration is done, the Enumerators will, after firmly stitching all the forms in the same book, send them to the Supervisors, and the Supervisors will test them and forward them to the Circle officer.

31. After being thoroughly examined and tested by Supervisors, Circle officers and Divisional officers, the returns must be sent to the Collector. The returns prepared by Municipalities must also be sent to the Collector. Instructions as to what is then to be done with them will be issued hereafter.*

32. All officers must be warned that throughout the whole of these operations the greatest vigilance and energy will be required, and that any negligence or inaccuracy will be severely visited on those who are responsible for it.

33. To assist in calculating the expense of the census, the population may be classed thus :—

(1.) Inhabitants of Government villages.
(2.) Of Inam villages, Zemindaris and petty States.
(3.) Of thinly-peopled tracts.
(4.) Of Municipalities.
(5.) Of Cantonments.
(6.) Houseless, Marine, Prison, Wandering, Chuttram, Railway, &c.

34. In Government villages, Inam villages, Zemindaris, and petty States, very little expense need in the Board's opinion, be incurred. Government have been requested to issue a circular to Zemindars requesting their co-operation. In the case of proprietary villages, the proprietor can generally be induced to do all that is necessary. In large villages, where no Government officials can be found to do all the work, and no capable volunteers can be induced to undertake it, some expense will be necessary, and it must be calculated on the best data available.

35. In the hill tracts of the districts marginally noted and in the Native States of Banganapalli, Sundur, Puducottah, Travancore and Cochin, the arrangements for taking the census approved in G.O., dated 21st June 1879, No. 1324, should be followed.

Ganjam, Vizagapatam, Godávari, Kurnool, Salem, Coimbatore, Nílgiris, Malabar, Canara, Madura and Tinnevelly.

36. In Municipalities the enumeration will be left to the superintendence of the Commissioners.

37. The houseless, wandering, and travelling population must be enumerated at the final enumeration only. In the case of canals, ships, jails, the final enumeration is all that is required, and it can be done by the special officers concerned—*Vide* special rules printed as papers Nos. VI, VII and VIII.

38. The Railway authorities will be separately requested to make the necessary arrangements for taking a census of Railway employés living on the line, and of employés and passengers in trains—*Vide* special rules printed as paper No. V.

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* *Vide* rules as to the manner in which the census schedules and house registers were to be dealt with after the final enumeration paper No. X.

39. In Cantonments, a preliminary as well as a final enumeration is necessary. When the Cantonment is in a Municipality, the operations will be directed by the Commissioners; when it is not, they will be conducted by Commanding officers.

40. As it is of the greatest importance that the estimated expense of the census should be known to the Board, all Collectors are requested to report what expenditure they consider necessary for their districts before the end of July 1880.

41. Detailed instructions for Enumerators are sent herewith.* A copy should be stitched to each book of Forms (No. V) and given to every Enumerator.

42. Collectors are requested to compile as soon as possible separate lists of all known *castes* and *occupations* prevailing in their districts, making them as complete as possible, and giving the Vernacular names with a clear explanation of their meaning in English. These lists should be submitted to the Board.

43. Instead of the Forms 1, 3 and 4 prescribed in this circular, which do not apply to the circumstances of the Malabar District, the forms prescribed in Board's Proceedings, dated 28th October 1870, No. 6388, for the last census, will be used by the Collector.

Paper No. III.

Instructions for Enumerators.

A.—Preliminary Record of Entries.

1. The preliminary enumeration will begin on the 15th November 1880, and it must be finished before the 30th idem. Every morning on and after the 15th, you will proceed from house to house, filling in the forms and will enter in this book all the people living in your block. If there is not room for all in this book, another will be given you. If any householder wishes to fill up the form himself he may do so and a loose form will be given him for the purpose, but in this case you must scrutinize the entries and see that no mistake has been made.†

2. You must write very distinctly, in the language you know best, and in black ink.

3. By "house" you will understand a building to which a separate number has been affixed.

4. You will take a fresh page for each house and will be careful to enter the particulars relating to each inmate in one line. If one page will not contain the names and particulars of all the inmates of a house, they should be continued on the next page; but the names and particulars of the inmates of a fresh house must not be begun in the middle of a page. If any of the houses are unoccupied the word "empty" must be written across the form.

5. The first person entered in each house should be the head of the house, whether male or female. Visitors and others who may be expected to be absent at the final census should be entered after the list of the permanent residents has been completed.

6. You will enter all persons living in or taking their meals from the house at the time when the form is filled up. You will not enter any persons absent on journeys or temporarily residing elsewhere; but you will enter persons who are sleeping outside or are out of doors, fishing or working in the fields, or watching the crops, or, like yourself, away from home for some hours on Government business.

7. You will enter in this book the permanent residents in chuttrams, dâk bungalows, hotels, serais, and travellers' rest-houses, but you will not enter any travellers, pilgrims, or others merely resting there temporarily.

8. *Column* 1.‡—In this column a serial number must be given to each inmate of the house whether male or female. There will be a separate series for each house, not for each family residing in a house.

9. *Column* 2.—Enter here the names of all males in full. Enter also the names of females, if given; but if there is any objection to telling the names of females, enter the word "*female*" in Column 2, and fill in all other particulars as usual in the remaining columns.

10. *Column* 3.—Young boys and girls, who may have been married, should be entered as married, even though they may not have actually begun to live with their wives or husbands. A male or female whose first wife or husband has died should be entered as widower or widow, unless he or she has married again, in which case he or she is to be entered as married.§ You should simply record the answers made to you on the subject without instituting any inquiries as to the legality of the marriage in any case. In Malabar all married persons who have broken their conjugal ties but are not divorced will be shown as single.

11. *Column* 4.—Enter the proper sex in all cases whether or no you have written "*female*" instead of the name in Column 2.

12. *Column* 5.—In the case of infants under one year of age, enter the age in months, writing the word *month* after the number. In all other cases enter the number of years of age attained on the last birthday. If any person is unable to state his or her age precisely, do not leave Column 5 blank,

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* Superseded by those printed as paper No. III.

† See however *Circular No.* 1031, *26th January* 1881, *paper No. IV.*

‡ It would have been better had it been ordered that this should be done only at the final enumeration.

§ The wording of this instruction needs revision. It should run "A male or female, once married, but who has no wife or husband alive at the time of the census, should" &c. A "first wife" in this part of India means that wife of two or more, whom the man may have married first and who is therefore entitled to precedence among the wives.

but fill it up with as much accuracy as you can from your own observation if the person is before you, or after inquiry from the other inmates of the house. You are forbidden to ask to see any female who is not voluntarily produced before you.

13. *Column* 6.—Here enter the main religious denominations to which each person belongs, as Hindu, Muhammadan, Christian, Sikh, Jain, Brahmo or other religious division of Hindus not mentioned above, Buddhist, Jew, Parsi. If a person belongs to some aboriginal or non-Hindu tribe, and is not included in any of the above divisions, enter the name of his tribe. Amongst Hindus the entry should be "Shiva," "Vaishnava," "Lingayet," "Madhva," or "Smartha," &c., in addition to "Hindu."

14. *Column* 7.—In the case of Hindus, here enter the caste as Brahman, Rájput, &c. If the name of the sub-division of the caste is entered, you must also enter the general name of the caste as a whole. In the case of Mussalmans, state whether they are Shiahs, Sunnis, Farázis, or Wahábis. Christians should be shown as members of the Church of England, Roman Catholics, Presbyterians, Baptists, Wesleyans, Armenians, as belonging to the Greek or Syrian rite, or, if not belonging to any of these denominations, under the general head of "Others." If possible you should represent the caste or sect by some generally known word and not by one of merely local use.

15. *Column* 8.—"Mother-tongue" means the language ordinarily spoken in the household of each person's parents, whether or no it be that of the locality in which he or she is residing at the time of the census. If the father and mother speak different languages, both should be entered.

16. *Column* 9.—Here enter the name of the district where the person was born, and add the name of the province, if he or she was not born in the province in which his or her name is recorded. If the person was born out of India, the country will be named; no further detail is needed.

17. *Column* 10.—The occupation of every male, who is of age to do work, should be entered, or if he has no occupation, the source from which he chiefly derives his income, as pensioner. If he has several occupations that one should be shown from which his income is chiefly derived. But if he combines agriculture with any other profession or trade, such as that of Vakeel or moneylender, carpenter or smith, both occupations should be shown. Persons who are really engaged in agriculture should be shown as such, even though by caste they may be smith, potters, fishermen, &c.

Agriculturists should be described by terms indicating the nature of their connection with the land, such as proprietor, tenant, occupant, ploughman or herdsman employed all the year round, &c.

General terms such as servant, workman, shopkeeper, trader, &c., must be avoided: the particular service or trade or handicraft should be mentioned.

Women who follow the occupation of their husbands or their family, such as working in the fields, weaving, &c., should be shown as agriculturists, weavers, &c., like the husband or head of the house. Those who earn their livelihood by some special employment of their own as grinders, spinners, grass-cutters, &c., should be so recorded. Those who are chiefly employed in domestic work, such as looking after the house and children, cooking, &c., should have "none" entered against them in this column.

In every case the occupation must be expressed by the vernacular term by which it is commonly known.

Boys at school, girls, and small children should not be entered in this column. When persons are temporarily unemployed, enter their last or ordinary occupation.

18. *Column* 11.—Against those under instruction write "is learning"; against those not under instruction, but able to read and write, enter "knows"; against those who cannot either read or write, or who can read but cannot write, or can sign their names, but cannot read, write "does not know"; only those should be shown as able to read and write who can do both.

19. *Column* 12.—Enter as "lepers" only those who are afflicted with the true or eating leprosy. Enter as "deaf-mutes" only those who have been both deaf and dumb from birth. Enter as "blind" only those who are blind of both eyes.

B.—Final Enumeration.

20. The final enumeration will, except as shown in Rule 25, begin at daylight on the 18th February 1881. You will then take this book with the entries filled in, and visit every house in your block in order.

21. If any persons entered by you in the book were not on the previous night living in, or taking their meals from, the house, you will score out their names.

22. If any persons, not as yet entered by you in this book, have arrived at or been born in the house between 9 P.M. and 6 A.M. on the previous night and were then living in or taking their meals from it, you will enter their names with all particulars unless they have been previously enumerated. The provisions of Rule 6 here apply.

23. Generally, you will make such corrections in and additions to your entries as will put them in accord with the facts on the night of 17th February.

24. All additions and corrections must be made in red ink.

25. You must proceed to each chattram, dâk bungalow, encampment, cartstand, &c., within your block at 9 P.M. on the night of the 17th February, and count the travellers there and also any pilgrims or travellers by road (but not by rail) or others passing the night on the roads within your block. For these persons there will be no house number and no number in Column 1. You should state that they are travellers and enter in the forms all the usual particulars regarding them in red ink. The forms should afterwards be stitched or pasted into this book. The permanent residents in chattrams, dâk bungalows, hotels, serais, and travellers' rest-houses already entered under

Rule 7 should not be entered. The entries relating to them must be checked on the next morning together with those relating to the rest of the people in your block.

26. You are not to persist in inquiring the name of any female if there is any objection to giving it, or to ask any information not required for the purposes of the census, as, for instance, the amount of any person's income ; but all persons are bound to give you such information as will enable you to fill up this book of forms. Any Enumerator detected in extorting money on any pretext connected with the census renders himself liable to be punished under the Penal Code.

27. After the completion of the final enumeration you will enter on the outside of the book the following particulars :—1—District ; 2—Taluk ; 3—Village (number and name) ; 4—Name of Enumerator ; 5—Father's name ; 6—Supervisor's name ; and on a separate slip to be attached to the book, the above particulars with, in addition, those shown in the appended form :—

——	Males.	Females.	Total Persons.
Resident population			
Population counted under Rule 25			
Total ...			

Paper No. IV.

Extract from Circular No. 1031, *dated the* 26*th January* 1881.

2. It is laid down in Rule 1 of the Instructions to Enumerators that every householder wishing to fill up the Enumerator's forms himself may do so. It is now desired to make this rule more stringent, and to require all English-speaking persons of intelligence to receive the forms and fill them up. I have the honor to request, therefore, that you will issue early instructions *that all English-speaking householders of intelligence in the chief towns* should be required to correct the returns for their own households.

Instructions for Occupiers of Houses required to fill up the Census Schedules relating to their Houses.

Every occupier of a house or any part of a house, when called on to do so, is bound under Section 10 of the "Indian Census Act" to fill up, to the best of his knowledge and belief, the "Form of Enumerator's Schedule," to sign it, and to deliver it so filled up and signed to the Census Officer appointed for the place in which his house is, or to such person as he may direct. You will therefore fill up the accompanying form, sign it and deliver it to the Enumerator instructed to call for it on the 18th February 1881.

2. It will prevent much delay if you will give the schedule when filled up to your servant, or some member of your family, with instructions to deliver it without delay to the Enumerator on his calling for it.

3. It will be the duty of the appointed Enumerators to complete the returns if defective, and correct them if erroneous.

Instructions for filling up the "Form of Enumerator's Schedule" delivered herewith.

1. On the morning of the 18th February 1881, beginning at or after 6 A.M., you will enter in the form all the persons belonging to your household not already entered in it. If there is not room for all in the form, another will be given you. By "*household*" you will understand all those persons who between 9 P.M. on the 17th February 1881 and 6 A.M. on the 18th idem were actually living in or taking their meals from the premises in your occupation. A line should be drawn through the entries relating to any persons entered in the form, who were not actually living in or taking their meals from the premises as above said.

2. You must write very distinctly, in English, and in black ink.

3. The first person entered in the form should be the head of the household, whether male or female. Each family should be distinguished by a separate number placed over the name of its head, thus (1), (2), &c. Visitors and others should be entered after the list of the permanent residents has been completed. You will not enter any persons absent on journeys or temporarily residing elsewhere ; but you will enter persons who were sleeping outside or were out of doors, fishing or working in the fields or watching the crops.

Rules 8 to 19 of the Instructions for Enumerators above printed were here repeated.

16. You are not to persist in inquiring the name of any female if there is any objection to giving it, or to ask any information not required for the purposes of the census, as, for instance, the amount of any person's income ; but all persons are bound to give you such information as will enable you to fill up this form.

Paper No. V.

General Rules for taking the Census of the Railway Population in the Madras Presidency.

1. As part of the general census to be taken throughout India, a census of the Railway population will be taken by the Railway authorities, on the Madras and South Indian Railways, on the night of the 17th February 1881.

2. By the Railway population is meant all persons who on the night of census, or during the time occupied by the preliminary record of entries, are living and sleeping within *Railway premises*, whether actually in Railway service or not, and for the purpose of enumeration should be held to include—

(1) Resident employés, their families, and servants.
(2) Laborers and others employed on Railway work by contractors, and sleeping within Railway premises.
(3) Passengers intending to join any of the trains shown in Rule 22 or trains running in connection with them.
(4) Passengers alighting from any such trains.
(5) Passengers found in such trains at 6 A.M. on the morning after the census night.
(6) Employés travelling on duty.

3. Subject to the provisions of Rule 23, persons who work on the line, whether by day or night, but habitually return to their homes outside Railway premises in their non-working hours, are not to be enumerated as part of the Railway population, but in the villages or blocks where their homes are situated.

4. For census purposes, the line will be divided into charges, circles, and blocks. There will be a Superintendent for each charge, a supervisor for each circle, and an Enumerator for each block. The details of these arrangements will be finally settled by the Agents and Managers, but it is suggested that the charges should be Resident Engineer's divisions, that the circles should be large stations or groups of minor ones, under Permanent Way Inspectors; and that the blocks should be each minor station, or the distance between any two stations; that the Station Master should be appointed the Enumerator for his own station; and a travelling Enumerator for each station interval.

5. The Agency should as far as possible be unpaid, and it will be an advantage to utilize the services of English-speaking Natives or of Europeans where the population to be enumerated is mainly European.

6. It will be the duty of each Superintendent of a charge to see that the Supervisors and Enumerators generally understand their work and that the detail arrangements and preparations are properly made, prior to the actual taking of the census, and are then duly carried out.

7. It will be the duty of the Supervisor of each circle to see that the Enumerators within his circle thoroughly understand the instructions, and to test the correctness of at least 10 per cent. of the entries of each Enumerator within his circle. The Supervisors should commence testing the schedules on the 5th February, and should test as many as they can of the entries made by the Enumerators in the forms for the Native population. The duties of the Enumerators are defined in the annexed and subsequent Instructions.

8. The Agent for each line of railway, or such officers as he may depute to the special charge of the census operations, should consult on all main points and on all matters affecting the general arrangements with the Deputy Superintendent of Census. Any point which cannot be decided by him will be referred to the Census Commissioner. As regards minor local details the Collectors should be consulted.

9. Indents for Enumerators' forms No. V and for tickets referred to in Rules 20 and 21 below will be submitted by the Railway Managers to the Deputy Superintendent of Census, Madras. The Managers may frame their estimates of requirements on the basis of five permanent residents and ten passengers to each form. The requirements of each station will have to be separately considered. The check tickets referred to in Rules 20 and 21 will be prepared in Madras under the orders of the Deputy Superintendent of Census, and will be issued by him on indent as required. Their distribution will be arranged for by the Railway authorities.

10. An estimate of all disbursements to be made by the Railway authorities will be forwarded by them to the Census Commissioner. Such disbursements will be on account of remuneration to Enumerators, when paid officials cannot be got, extra payment for overtime work on the 17th February, and the cost of contingencies as stationery, oil, &c. In the estimate these three heads should be separately shown.

11. The Manager's proposals under these rules should be prepared in the annexed form and forwarded to the Deputy Superintendent of Census at as early a date as possible:—

Charge and names of Supt.	Circle and name of Supervisor.	Block.		Enumerators.			No. of Forms required.		No. of check tickets for each block with reference to Rules 20 and 21	Office to which the returns for each block are to be sent with reference to Rule 27	Cost of enumeration at each station.
		No.	Name.	No.	Names.	Proposed employment as Station Enumerator, Passenger Enumerator, &c	For Class 1 in para. 2.	For Classes 2 to 6 in para. 2.			
1	2	3	4	5	6	7	8	9	10	11	12.

12. The numbering of the houses in the Railway premises has it is probable been already completed by the Revenue authorities in accordance with the Board's Proceedings recorded in G.O., 20th August, No. 987. If not, this duty will be completed by them and an extract from the register of houses will be made over to the Railway authorities as soon as possible after the receipt of these instructions. Any houses afterwards found unnumbered should be numbered by the Railway authorities and should be included in the House Register under consecutive numbers. The House Register should be compiled for each block from the extracts received from Collectors.

13. There will be a preliminary as well as a final enumeration in Railway premises as elsewhere.

Preliminary Enumeration.

14. The preliminary enumeration will be entirely confined to the native employés who are permanent residents within Railway premises. By permanent residents within Railway premises is meant all persons, who at the time of the preliminary enumeration, habitually live in and take their meals from houses standing within station limits, or elsewhere on the line within its fences.

15. The preliminary enumeration will begin on the 1st February 1881, and be completed by the 5th. During this period each Enumerator will visit each house within his block and will fill up his book, carefully observing the instructions to Enumerators.

Final Enumeration, or Enumeration on the Census Night.

16. The Enumerators should be instructed to leave, on the 15th February, private schedules in English at the houses of all European and English speaking employés, who should be requested to fill them up for their own families and servants, including all visitors in their houses in accordance with the facts existing on the night of the 17th February.

17. The enumeration on the census night will embrace all the six classes of the Railway population as defined above in Rule 2. It should be especially noticed that the enumeration of all the classes will be carried out between 9 P.M. and 6 A.M. on the night of the 17th February. The Enumerators commencing at 9 P.M. on that night should take the final census of all the native population previously enumerated by themselves, correcting the entries according to the facts as then found to exist. On the morning of the 18th they should go round and collect from the different heads of houses the private schedules distributed under Rule 16.

18. In enumerating all the classes given in Rule 2 above, Rules 2, 8 to 19 inclusive, 26 and 27 of the annexed Instructions to Enumerators must be observed.

In enumerating Class 1 there given, Enumerators will observe in addition Rules Nos. 21 to 24 of the annexed instructions and special Rule 23 following.

In enumerating Class 2 they will observe in addition Rule 25 of the annexed instructions.

In enumerating Class 3 they will observe in addition Rule 25 of the annexed instructions, omitting the words "road (but not by)" and special Rule 20 following.

19. In regard to the other classes of the Railway population the following special rules should be observed in addition to those mentioned in Rule 18.

20. *Rule for the 3rd Class.*—Every passenger intending to join any of the trains shown in Rule 22 or any train running in connection with them and sleeping between 9 P.M. on the 17th and 6 A.M. on the 18th February at any Railway station within the fences will, on enumeration, be given a check ticket showing that he has been included in the returns, which he should be told to produce if any one tries to count him again.

21. *Rule for the 4th Class.*—Every passenger of the 4th class alighting between 9 P.M. on the 17th February and 6 A.M. on the 18th at any station from any of the trains quoted in Rule 22, or from any trains running in connection with them but arriving at their destination before 6 A.M., will be counted at the station where he alights. His name and the other necessary particulars should be entered in the book of forms as he leaves the station; and he should be given a check ticket showing that he has been included in the returns, which he should be told to produce if any one tries to count him again.

22. *Rule for the 5th Class.*—The enumeration of passengers of the 5th class travelling by the trains as shown below will be carried out at the stations shown:—

Time.		Trains.	Stations.
Madras Railway ...	1	South-West Line Mail to Madras ...	Perambúr.
	2	South-West Line Mail from Madras ...	Erode.
	3	North-West Line Mail from Madras ...	Gooty.
	4	North-West Line Mail to Madras ...	Perambúr.
South Indian ...	5	Train No. 8	Vaiyampati.
	6	Train No. 11	Porto Novo.

No check tickets need be given on this occasion.

23. *Rule for the 6th Class.*—All Railway employés on duty as drivers, guards, firemen, &c., with the trains mentioned above, if they have not been before counted on the night of the 17th, should be enumerated at the station where they alight, if they finally leave the train before 6 A.M. on the 18th February. Otherwise they will be counted with the passengers in the trains at 6 A.M. They may be entered in a separate schedule.

All other Railway employés who are on duty on the night of the 17th, but are not travelling with any train, should be recorded as present in the homes where they were entered in the private schedules, or at the time of the preliminary enumeration.

24. In the case of 1st and 2nd class passengers, and Europeans travelling 3rd class, private schedules with a copy of the instructions for filling them up should be provided by the guard of the train on the evening of the 17th February, and they should be requested to fill up the particulars for themselves and any members of their families travelling in the same train, but not for native servants travelling with them. These schedules should be collected at the station when the train stops at 6 A.M. and the Enumerator (who should be a European) should see that they appear correctly filled up. He should also himself fill up the schedule if, in any case, the passenger has omitted to do so.

25. There should, when necessary, be a special Enumerator appointed at each station to count the travelling population on the night of the 17th February. Extra Enumerators in addition to the station, &c., Enumerators will have to be placed on duty at the stations mentioned in Rule 22 above. One Enumerator to every 30 persons to be enumerated should be employed to avoid the detention of trains.

26. Troops travelling by rail are not to be enumerated, but this exception does not extend to any native servants travelling with them.

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28. The Municipality of Madras will be deemed a district for the purposes of these rules and the President its Collector.

Paper No. V-A.

Instructions for Passengers by Train required to fill up the Census Schedules.

As part of the arrangements for the General Census of India, every 1st and 2nd class passenger by rail, and every European travelling 3rd class, is hereby requested to fill up, to the best of his knowledge and belief, the "Form of Enumerator's Schedule" delivered to him herewith by the guard of the train, to sign it, and to deliver it so filled up and signed to the Enumerator appointed to collect such schedules at the place where the train stops at 6 A.M. on the 18th February 1881. Any person neglecting or refusing to fill up the schedule, or wilfully filling it up incorrectly or improperly, is liable to be prosecuted.

2. It will be the duty of the appointed Enumerators to complete the returns if defective, and correct them if erroneous.

Instructions for filling up the "Form of Enumerator's Schedule" delivered herewith.

1. You will enter in the form all the particulars as required by the following rules for yourself and any member of your family travelling in the same train, but not for your native servants if travelling with you. If there is not room for all in the form, another will be given you.

2. You must write very distinctly, in English, and in black ink.

Rules 8 to 19 of the Instructions to Enumerators above printed were here repeated.

Paper No. VI.

Rules for enumerating the Residents within the limits of the Navigable Canals of the Madras Presidency and the Boat Population afloat upon them on the night of the 17th February 1881.

As part of the General Census of the Presidency an enumeration of the residents within the limits of the navigable canals and of the boat population found afloat on them will be arranged for by the officers of the Public Works Department.

2. By canal limits is meant any land taken up for any use in connection with the canal and under the control of the canal authorities, and that area set apart at each lock or stopping-place with regard to Rule 6 following. By residents within canal limits is meant all persons permanently living in, or taking their meals from, a house standing within canal limits.

3. By boat population is meant all those persons who are afloat on the canals on the night of the 17th February 1881, or who may then be on a boat journey.

4. The canal limits will be divided into charges, circles, and blocks. To each charge there will be a Superintendent, to each circle a Supervisor, and to each block an Enumerator.

5. Each block will embrace—

(1.) A lock or stopping place.

(2.) A "reach" of the canal. The length will be determined as may be expedient in each case. The provisions of Rule 7 should be borne in mind, however, in determining its length.

(3.) An assigned area. The block may be formed either of a lock or stopping-place and a reach of the canal; or a lock or stopping-place and the assigned area; or any portion of these as may be convenient in each case.

6. By assigned area in the last rule is meant a small and distinctly marked area round each lock or stopping-place in which the boat population usually cook or sleep. It may include a chattram or other building used for a similar purpose and the houses of canal employés, but should not, except in special instances, include the house of any one not employed in connection with the canal. This area must be fixed in each case prior to the preliminary enumeration in communication with the Revenue or Municipal authorities, and must not be subsequently changed.

7. There must be but one Enumerator to each block. In forming the blocks, an Enumerator should not be assigned more than 40 houses and 100 persons of the estimated boat population; or, if the number of houses be less than 40, then three persons of the boat population for every house wanting. Thus a block of 5 houses would have $35 \times 3 + 100 = 205$ persons of the estimated boat population in it.

8. It will be the duty of each Superintendent of Works or of the officer in charge of the canal to appoint the Superintendents, Supervisors, and Enumerators. He will exercise a general control and will submit the statement called for in Rule No. 15. The agency should be, as far as possible, unpaid, and the services of the canal establishment should be utilized to the utmost.

9. It will be the duty of each Superintendent of a charge to see that the Supervisors and Enumerators generally understand their work, and that the detailed arrangements and preparations are properly made prior to the actual taking of the census and are then duly carried out; and after the final enumeration is completed, to arrange that the Enumerators' books complete are sent to the proper officers as shown in Rule No. 15.

10. It will be the duty of the Supervisor of each circle to see that the Enumerators within his circle thoroughly understand the instructions, and to test 10 per cent. of the entries of each Enumerator.

11. It will be necessary that the Enumerator of a "reach," or in whose block a reach is included, should traverse the whole length of the canal comprised in his "reach" between 9 P.M. on the 17th and 6 A.M. on the 18th February 1881. He should enter every person then found within the "reach." If absolutely necessary a boat may be provided for his use and a Policeman assigned for his protection and aid on the Buckingham Canal. If any difficulty arises in enumerating any boat or party, the fact should be reported the next morning, together with the number of the boat or other clues to identification to the Supervisor and Superintendent, who will determine what further steps should be taken in the matter. On enumerating any person, whether in a boat or a traveller on a boat journey found sleeping or cooking within canal limits, the Enumerator will give him a ticket instructing him to preserve it as a certificate that he has been counted, and to produce it if any one tries to count him again.

12. The tickets above referred will be the same as those used on the railway. They will be prepared in Madras under the orders of the Deputy Superintendent of Census Operations, and will be supplied by him as required on indent.

13. The Collector will supply the funds to meet any expenditure that may be incurred by Superintendents of Works, including the same in his estimate of the cost of the census of the district. Superintendents of Canals will make their arrangements in consultation with the Collector.

14. The Superintendents of Works will indent on the Collector of the district in which the Enumerators' blocks are situated for the number of Enumerators' schedules required by him. The forms will be supplied from the nearest Taluk Treasury, or as may be most convenient. These indents should be submitted without delay. The number of boats usually stopping at each lock or station and from that the number of persons in them can easily be estimated. Ten entries for the boat population may be taken as the numbers for each schedule and five entries for each house.

15. The Superintendents of Works' proposals should be summarised in the appended form, which should be sent to and should reach the Deputy Superintendent of Census not later than the 1st November.

Names of Charge and Superintendent.	Name of Circle and Supervisor.	Blocks.		Enumerators.			Number of Forms required.		Number of Tickets required.	Name of Officer to whom the Returns of the Resident Population are to be sent.
		Number	Name, &c., or Description.	Number.	Names.	Duties.	Number.	Where needed.		
1	2	3	4	5	6	7	8	9	10	11

16. The numbering of the houses within canal limits has probably been already completed by the Revenue or other authorities. If not, the operation will be completed by them and an extract from the register of all houses within canal limits will be made over to the Public Works Department Officers prior to the preliminary enumeration.

17. There will be a preliminary as well as a final enumeration made by Public Works Officers.

18. The preliminary enumeration will embrace only the residents within canal limits as defined in Rule 2.

19. It will begin on the 15th November and must be completed by the 30th. During this period each Enumerator will visit each house within his block, and will fill up his book in accordance with the instructions to Enumerators appended.

20. The final enumeration will embrace both residents within canal limits and the boat population.

21. In making this enumeration the Enumerators will observe Rules 8 to 24, 26 and 27 of the annexed instructions to Enumerators. Rule 25 will be read as follows:—

You will proceed at 9 P.M. on the night of the 17th February 1881 to enumerate the boat population and all persons, other than permanent residents, found within your block, or sleeping or cooking there; for these persons there will be no house number and no number in column 1. You should enter them as "boat population," but should enter in your book all the usual particulars regarding them. The occupants of any boat arriving within your block between 9 P.M. and 6 A.M. on this night must be counted by you unless they produce a ticket showing that they have been previously counted. You should ask for this ticket in each case.

22. All entries relating to the boat population should be made in red ink, for a sufficient supply of which arrangements must be made.

23. After the final enumeration the returns may be checked by the Supervisors, or in such manner as the Superintendent of Works may consider best; no elaborate check should, however, be attempted, nor one likely to delay the early submission of the forms.

24. The returns, both of the residents within canal limits and of the boat population, will be sent to the offices mentioned in column 11 of the statement prescribed in Rule 15 above. In determining the officers to whom the returns are to be sent, the principle to be observed, so that the returns may be received in the proper bundles, is that the residents within canal limits will be reckoned as part of the population of the nearest census block to that in which they are found; but the boat population will not be reckoned as part of the population of the stopping-place in which they may be found. They will be excluded altogether from any particular census block. The Collector will determine which is the nearest census block for the purposes of this rule in regard to the resident population. The returns relating to the boat population must be sent to the Collector of the district in which the block is situated.

25. The Madras Municipality will be deemed a district for the purpose of these rules and the President its Collector.

* * * * * *

27. In the case of the Vedarniem Salt Canal, the duties herein assigned to the Public Works Department Officers will be carried out by those of the Salt Department.

Paper No. VII.

Rules for the Enumeration of the Sea-going Population in the Madras Presidency.

1. As part of the arrangements in connection with the taking of the General Census in February next an enumeration of the sea-going population will be arranged for in accordance with the following rules.

2. By sea-going population is meant all persons who between 9 P.M. and 6 A.M. on the night of the 17th February 1881 are afloat in any ship, vessel or boat, of any kind at anchor within the limits of any Port or Roadstead in the Madras Presidency, but it is not intended to include any person in any boat or vessel moored to the shore or bank, or alongside any quay, and which can be boarded at high water directly from the land.

3. Fishermen who may be off shore between 9 P.M. and 6 A.M. on the census night engaged in the pursuit of their calling will be enumerated with their households, where they should be marked as temporarily absent.

4. No vessels under foreign colors need be enumerated or provided with forms, unless they are going to remain at anchor until after the census night.

5. Should it be expedient in any case to vary or extend the limits of the port for census purposes, the Collector of the district will fix the limits, but no alteration should be made unless a considerable number of boats or vessels are thereby likely to be enumerated otherwise than with the sea-going population. In the case of ports mentioned in Schedule A, the Collector will fix the limits in communication with the Marine or Municipal authorities or both.

6. The enumeration of the sea-going population will be carried out by the Marine Department within the limits of the ports shown in Schedule A attached. Each port will be regarded as a circle, the Chief Marine Officer being its Supervisor.

7. It will be the duty of each Schedule A Port Supervisor to appoint the Enumerators to be employed under him; one Enumerator for (say) every 200 persons of the estimated sea-going population

should be appointed for the enumeration on the census night, and one for every 800 for the distribution of forms, &c., during the previous seven days. It will also be the duty of such Supervisor to see that the Enumerators so appointed thoroughly understand the Instructions to Enumerators appended, and to test the correctness of 10 per cent. of the entries of the Enumerators within his circle. He should make and carry out his arrangements generally in communication with the Collector of the district in which the port is.

8. In the ports shown in Schedule B the enumeration will be arranged for by the Collector of the district subject to these rules. In the arrangement of blocks and circles, and of the appointments to them, he will follow the general instructions, and make that arrangement which seems to him best, having regard to the circumstances of each case.

9. The agency employed should, as far as possible, be unpaid, and should generally be the Marine or Sea Customs Establishments. The services of the officers of both these departments should be utilised to the utmost.

10. In all places other than Schedule A or Schedule B Ports, the enumeration of the sea-going population will be made subject to the general rules laid down for the taking of the census.

11. The Marine authorities for Schedule A Ports should apply to the Collector of the district for the funds necessary to carry out these rules. Funds will be supplied to the limit of the estimates already submitted by the Collector to the Revenue Board and sanctioned. Should extra funds be required, or should no funds have been sanctioned, supplemental estimates should be submitted through the Collector to the Board of Revenue for sanction.

12. Collectors will indent on the Deputy Superintendent of Census, Madras, for the number of check tickets required with reference to Rule 24 following for their districts. Indents for the number of Enumerators' forms, and of the check tickets required by the Marine authorities at Schedule A Ports, will be made on the Collector of the district in which those ports are. These indents should be submitted with the least practicable delay.

13. The returns of the sea-going population will be tabulated with those of the port at which such persons may be counted, and should go therefore to that officer to whom the returns of the other inhabitants of the town go. The Collector of the district in which the port is situated will determine to what officer the returns should go. The name of this officer will be entered in column 8 of the statement required by the following rule. The Marine authorities at each Schedule A Port will ascertain from the Collector of the district the officers to whom the returns are to go.

14. The Marine authorities will submit, as early as practicable, through the Master Attendant, Madras, for each Schedule A Port a statement showing the following particulars :—

Port.	Name of Supervisor.	Enumerators.			Number of Forms of Enumerator's Schedule required.	Number of Check Tickets required with reference to Rule 24.	Office to which the Returns are to be sent with reference to Rule 13.	Estimated Cost of Enumeration at each Port.	Remarks.
		Number.	Names.	Nature of proposed Employment.					
1	2	3	4	5	6	7	8	9	10

These statements will be compiled into one statement in the Master Attendant's Office, which will be sent to the Deputy Superintendent of Census not later than the 1st January 1881.

15. The Collector of the district in which the port is situated will forward a similar statement for his district showing the like particulars for each Schedule B Port.

16. Only the final enumeration of the sea-going population will be made. It will begin at 9 P.M. on the night of the 17th February 1881. In making it the Enumerators will be guided by Rules 6—8 to 24, 26 and 27 of the annexed Instructions to Enumerators and by the following rules :—

17. All ships, vessels, and boats should be ranged so as to facilitate the final enumeration.

18. During the seven days prior to, and inclusive of, 17th February 1881, all vessels of 15 tons and upwards in, or arriving at, any port will be boarded by an Enumerator who will himself then fill up the form for the standing crew, &c., of the vessel. The name and tonnage of the vessel should be entered in the Enumerator's Schedule instead of the house number, and the name of the port instead of town or village. Each vessel should be regarded as a house.

19. Should the Master or other person in command or charge of the vessel be competent to do so, the form may be left with him to be filled up, but in this case the Enumerator must satisfy himself by subsequent inquiry that the form has been correctly filled up.

20. The form so filled up under Rules 18 and 19 above should be left, or retained on board the vessel until the night of the 17th February. It will ultimately be collected either under Rule 22 or 25.

21. Vessels carrying passengers should be dealt with under Rules 18, 19, and 20 at the last port at which they are expected to touch before the census night, and should then be supplied with spare forms sufficient for the number of passengers, &c., on board, calculated at one form to every ten passengers. The Master or other person in command or charge of the vessel should be instructed to enter in them on the morning of the 18th February all the passengers who were on board his vessel between 9 P.M. and 6 A.M. on the previous night, and give the forms up at the next port of call if the vessel has meanwhile left the port at which the forms were supplied. A copy of the Instructions to Enumerators should be left with him. In the case of coasting steamers the time between port and port may be calculated within a few hours, and so with these there should be little, if any, difficulty. Greater care will be necessary with the sailing craft.

22. After 9 P.M. on the night of the 17th February the Enumerator of the sea-going population will first proceed to all vessels, &c., of 15 tons and upwards in the port, and will receive from them the Enumerator's Schedule filled up under Rules 18 and 19. He will satisfy himself that every one entered in it is on board. He will strike out the entry relating to any person not found on board, and he will enter any person found on board but not entered in the schedule.

23. He will then visit all boats at anchor, and will enter all persons found in them in one general list.

24. Every vessel of 15 tons and upwards will on enumeration on the night of the 17th February be given a check ticket showing that she has been enumerated, which the Master, or other person in command or charge of the vessel, should be instructed to retain as evidence that his vessel has been counted, and he should be instructed to preserve it and to produce it should any one try to enumerate his vessel again.

N.B.—This rule applies generally wherever the vessel may be, whether she is enumerated under these rules or not.

25. Every vessel of 15 tons and upwards entering any port from any other port in India after the night of the 17th February and before the 1st March 1881 will be boarded and inquiries will be made as to whether she was at sea on the night of the 17th February 1881, and whether her crew and passengers have already been enumerated elsewhere under these or any other rules. If the Enumerator is satisfied that they have not been so enumerated a form should be filled up for the vessel in the usual way, or, if the Master holds forms already filled up, they should be collected.

26. For the purposes of these rules the Municipality of Madras will be deemed a district and the President its Collector.

SCHEDULE A.

1. Ganjam.
2. Gopálpur.
3. Calingapatam.
4. Bimlipatam.
5. Vizagapatam.
6. Cocanada.
7. Madras.
8. Cuddalore.
9. Porto Novo.
10. Tranquebar.
11. Nazore.
12. Negapatam.
13. Tuticorin.
14. Cochin.
15. Calicut.
16. Beypore.
17. Tellicherry.
18. Cannanore.
19. Mangalore.
20. Masulipatam.
21. Pámban.
22. Quilandi.
23. Ponáni.
24. Badagara.

SCHEDULE B.

1. Sonapore.
2. Bárwa.
3. Púndi.
4. Bapanapadu.
5. Pentukotta.
6. Pudimadaka.
7. Coringa.
8. Narsápur.
9. Nizampatam.
10. Ipurupálem.
11. Kottapatam.
12. Itamukkala.
13. Pákala.
14. Rámapatam.
15. Juvaladinne.
16. Iskapalli.
17. Maipadu.
18. Kistnapatam.
19. Dugarázpatam.
20. Tirumalavasal.
21. Valangani.
22. Toputorai.
23. Mutupet.
24. Adirámpatnam.
25. Ammápatam.
26. Kottaipatam.
27. Tondi.
28. Devipatam.
29. Kilakarai.
30. Koilpatam.
31. Kulasekharapatnam.
32. Attuparam.
33. Chowghat.
34. Tánúr.
35. Collayi.
36. Ballaipatam.
37. Kásaragód.
38. Cumbla.
39. Munjeshwar.
40. Mulki.
41. Malpé.
42. Bárkúr or Hungaracotta.
43. Coondapoor.
44. Nayakankotta.
45. Baindur.

PAPER NO. VIII.

Rules for Censusing the Jail Population in the Madras Presidency.

1. By jail is meant—
   (1) Any jail under the direct administration of the Jail Department;
   (2) Any Military Prison, Garrison or Station Cells, and Guard Rooms;
   (3) Any subsidiary or other Jail not under the direct control of the Jail Department, but under that of the chief magisterial authority of the district;
   (4) Police lock-ups.
2. By jail population is meant—
   (*a*) All prisoners whether convicted or in custody;
   (*b*) All guards, warders, or others who lived, slept, or were on duty continuously between 9 P.M. on the night of the 17th and 6 A.M. on the 18th February within the outside enclosing wall of any jail.

3. Only the final enumeration will be made in any jail. It will be made on the morning of the 18th February.

4. It will be made by, or under the superintendence of, the chief officer in direct charge of the jail, assisted in the work of enumeration, if necessary, by the subordinate jail officers. No paid agency should be employed in the enumeration.

5. It will be the duty of the chief officer in charge of the jail to see that the persons employed to assist him thoroughly understand the duties of an Enumerator; and that the detailed arrangements and preparations are properly made prior to the actual taking of the census, and are then duly carried out. The duties of an Enumerator will be found in the Instructions to Enumerators appended, more especially in Rules 2, 4, 8 to 23 and 27. No Enumerator should be required to enumerate more than 150 persons of the jail population.

6. The chief officer in direct charge of the jail must also arrange for the checking of the Enumerator's work after the enumeration, and before the returns of the jail are sent in, especially that portion of it which relates to the jail inmates other than prisoners.

7. The schedules relating to each jail should be submitted with those of the census block in which the jail stands, except in the case of prisons of the 2nd class in Rule I. The officer in charge of the jail, or, if it be more convenient, his superior officer, before issuing detailed instructions under these Rules, will ascertain from the Collector of the district, or from the Municipal President when the jail is in a Municipality, the officers to whom the returns of his jail are accordingly to be sent.

Special Rules for Jails of Class 1 *in Rule I.*

8. The officers in charge of jails should be directed to submit to the Inspector-General of Jail a list, showing (1) the name of the jail; (2) that of the chief officer in charge; (3) the names and fathers' names of the officers to be detailed for the enumeration of the jail population; (4) the average daily number of the jail population for the months of September, October and November 1880; (5) the office to which the returns of the jail are to be sent; (6) the estimated cost of the enumeration if any. These lists will be sent on to the Deputy Superintendent of Census Operations, and should be submitted so as to reach the Inspector-General of Jails not sooner than the 1st January 1881, or later than the 15th idem. The Inspector-General of Jails will prepare from them a consolidated return for all the jails under his control.

9. Collectors will supply funds to meet any expenditure that may be incurred by officers in charge of jails including the same in their estimates of the cost of the census of the district. Collectors will also supply on indent such stationery articles as may be required (which should be purchased locally), forms, &c. The indents for forms should be based on the assumption of ten entries of the jail population to each form.

Special Rules for Jails of Class 2 *in Rule I.*

10. Military Prisons, Garrison or Station Cells, and Guards Rooms are in cantonments of which the census is to be taken (1) either by the Military authorities or (2) by the Municipal Commissioners or other agency. In the first case the returns of the jails will be dealt with by the Commanding Officer. In the second they will be handed over to the Enumerators of the block, who will call for them and treat them in all respects as those of a private householder, who may fill up his own schedule.

Special Rules for Jails of Classes 3 *and* 4 *in Rule I.*

11. Subject to the above General Rules, jails of Classes 3 and 4 in Rule I will be censused in all respects as the house of a private householder, who may undertake to fill up his own schedule.

With reference to a ruling received from the Government of India, the entries in the occupation column against prisoners in jails, lock-ups, &c., were made under the following rule:—

"Against persons confined for debt—write 'prisoner, civil debtor.'

"Against persons under trial—write 'prisoner, under trial.'

"Against persons convicted—write 'convict.'

"Against persons confined for any other cause write 'prisoners others.'

"In all cases after the above entries, write the former occupation of the persons in the manner laid down in the amended Rule, No. 17 of the instructions for Enumerators. The occupation in which the prisoner is employed in the jail should not be given."

Paper No. IX.

Rules for Censusing Regiments on the march and of Troops on detachment.

(1.) The census of regiments on the march and of detachments of troops on duty within this Presidency will be taken by the officers in command. This census will include all persons of whatever sex, age, race, or profession who are marching with the troops.

(2.) If the regiment or detachment is travelling by rail on the night of the census, the census should be taken at the first place at which they alight. Such troops will not be enumerated in the Railway Census.

(3.) The Deputy Superintendent of Census will, through the Military Department of Government, supply the Commanding Officers with the necessary schedule forms and instructions to enable

them to census the people under their command. Officers in command of regiments or detachments travelling by rail on the night of the census will also be similarly supplied with the requisite forms and instructions.

(4.) The Commanding Officers will, after satisfying themselves that the enumeration is complete and that the schedules have been correctly filled up, forward them, packed up separately for each regiment or detachment, to the Collector of the district, who will eventually send them to the Deputy Superintendent of Census for purposes of compilation.

Paper No. X.

Rules as to the manner in which the Census Schedules and House Registers are to be dealt with after the Final Enumeration.

A.—Census Schedules.

After the final enumeration has been completed, and after the Supervisor has completed the checking of the schedules, he will see that Rule 27 of the Instructions to Enumerators has been observed. He will also see that the schedules have been placed in regular order, that none are missing according to the house registers, and that they are properly stitched into books. The date by which the returns are to be sent in to the Superintendents by the Supervisors, &c., must be fixed by the Collector with regard to the circumstances of each case. It should be fixed as early as possible consistently with an efficient check, but should in no case be later than the 2nd March 1881. All the schedules from every district must reach the Central Census Office not later than the 1st April 1881. They should be sent in as much before that date as possible.

2. The Supervisor will place all the Enumerators' books relating to one village in one packet. Should there be more than one Enumerator in the village, the books must be placed in the same order in which the Enumerators' names appear in the Supervisors' list prepared under paragraph 12 of the Board's General Instructions and already submitted to the Central Census Office, hereinafter called the sanctioned Supervisors' list. The books must be placed so that the side to which the slip prepared under Rule 27 of the Instructions to Enumerators, and on which the Enumerator's name, &c., appears, may be uppermost.

3. Each village will be tied up into one packet with strong string or thread lengthways and across.

4. These packets will be tied up into bundles, the villages being tied up in the order under which they are entered in the sanctioned Supervisors' lists. In each bundle must be placed an extract from columns 1 to 5 of the sanctioned Supervisors' list showing the names of the villages and the blocks comprised in that bundle. Should it be necessary to make two or more bundles, that containing the first villages in the sanctioned Supervisors' list should be marked No. 1, and so on.

5. Where there are no villages shown in the sanctioned Supervisors' list, the packets must be tied up into bundles in the order of the blocks in that list.

6. All the bundles should then be sent to the office of the Superintendent of the charge. With them an extract from the sanctioned Supervisors' list for the whole circle corrected so as to show the facts at the final enumeration should also go. Against each case the cause of the correction or variation, if any, should be stated. The extract should be signed by the Supervisor. It will, of course, correspond with and comprise all the lists placed in the several bundles under Rule 4.

7. On receipt of the bundles from the Supervisors in the offices of the Superintendents of charges, they should be opened and the contents checked by reference to the list enclosed. These lists should also be compared with the extract prepared under the last rule. If found correct in both respects, the lists found in the bundles should be signed by the Superintendent of the charge and returned to the Supervisor.

8. The extract list prepared under Rule 6 should then be carefully compared with the sanctioned Supervisors' list, and any discrepancies or errors not sufficiently explained inquired into and cleared up, and a memorandum of differences prepared in the following form :—

Name, father's name, and occupation of Supervisor.	Block.		Name, with father's name and occupation of Enumerator as entered in the schedules.	Name, with father's name and occupation of Enumerator as entered in the sanctioned Supervisors' list.	Remarks.
	Name.	Number.			
1	2	3	4	5	6

Note.—When there is only one block in a village, the name of the village must be entered in column 2. Where there are several blocks in a village, the name of the village must be shown in column 2 for every block in it. Where there are two or more villages in one block, the names of all the villages must be entered in column 2. If the block is described otherwise in the sanctioned Supervisors' lists, the description there given must be treated as the name of every block to which it applies.

These memoranda will be compiled into one consolidated memorandum for each Superintendent's charge, and submitted therewith for the information of the Central Census Office.

9. After the schedules have been thoroughly tested as prescribed by Rule 35 of the Board's General Instructions, they will be repacked in the manner prescribed by Rules 2, 3, 4, 5, and 6 above and despatched.

10. The schedules, before despatch from the Superintendents' Offices, should be packed in some stout waterproof substance. This the Collector will provide locally, or as may be most convenient and least expensive. Should the papers have to make a long journey by land or sea, or be liable to rough usage, the bundles should be placed in boxes if procurable without heavy expense, and should in all cases be protected by strong but light strips of wood fastened lengthways. The bundles should be tied with strong cord or rope at sufficiently near intervals in the latter case. Each package should be marked "Census Schedules" with the Superintendent's name and his official designation, and also with the name of the taluk.

11. The duplicate copy of the list prescribed in Rule 6 should be sent to that superior officer by whom the bundles are to be opened, and he must, in repacking, &c., conform to Rules 2, 3, 4, 5, and 6. Should the packages, though passing through the office of a superior officer, not be opened there, or should they be consigned to the Central Census Office direct, the lists should be sent direct to the latter office.

12. On receipt of the packages in the Central Census Office they will be examined and the lists found in them, and the extract list prescribed by Rule 6 compared with the corrected Supervisor's list, and, if there be no error or discrepancy or none unexplained, the lists will be returned to that officer from whom the packages were received, signed by a responsible officer of the Central Census Office.

13. These rules will be followed in packing and forwarding Municipal, Railway, Canal, Jail, and Marine schedules and those relating to Hill tribes and Native States. When schedules of any kind are sent for incorporation with those sent in from any office, they should be placed after those of the block prescribed. Such schedules should be made into a separate packet or bundle. Those relating to different blocks, if any, should be tied up separately, and blocks should be distinguished by a letter or letters in column 4 of the list prescribed by Rule 6 under the prescribed block number. The name or names of the Enumerators should be shown in the column 5 of the list and a remark as "Railway, &c., Schedules" should be made in column 8.

B.—House Registers.

14. The house registers should be sent in at the same time as the schedules. It should be ascertained that none are missing. Rules 2 to 13 will apply *mutatis mutandis* to the packing and forwarding of the house registers with the following exceptions:—

1. Rules 3 and 8 will not apply. As provided in the latter rule, however, any discrepancies and errors not sufficiently explained must be inquired into and cleared up.
2. The extract from the sanctioned Supervisors' list should be for columns 1, 2, and 3, and in the 4th column should be shown only the total number of blocks to which the register relates.
3. The bundles should be marked Census Returns—House Registers.

C.—General.

15. In the case of any department other than Revenue, the chief officer in charge of the Census arrangements will take the place of the Collector under these rules for his own department. In such cases the sanctioned Supervisors' list means the list called for in the rules relating to that department.

16. These rules should be translated if necessary, printed, and supplied to each Supervisor. A printed form for the preparation of the memorandum prescribed in Rule 8 should also be supplied.

PART II.

Containing Extracts from the Reports of Collectors on several points connected with the operations as well as their suggestions for the future.

The Collectors of districts were requested to report on the points noted below among many others in Circular letter No. 1444, dated 24th March 1881. I give the following extracts from their reports as I shall, I think, thus best give the views of those officers in the form in which they will be of most use. The other points noticed by them have been compiled into the general statement of the operations given in the third part of this Appendix :—

Points reported on.

Arrangements for census. Difficulties met with in different cases; faults in the general scheme, and suggestions for future operations; any suggestions as to the proper size of blocks in a future census; the time and method of numbering houses; the form and size of the schedules and Enumerators' books; the use of the term "house;" the number of private schedules issued, with any remarks as to the possibility of extending their use.

Agency. Advantages or otherwise of employment of unpaid agency; difficulties found in procuring voluntary non-official enumerators.

The demeanour of the people. Whether suspicious, obstructive, or the reverse; how far the objects of the census were explained, understood, or misapprehended.

Opinions as to the general accuracy of the results of the census in different parts of the district and among different races, with grounds of opinion.

Ganjam District.

Extracts from a Report by G. D. LEMAN, Esq., Collector of Ganjam, dated 20th May 1881.

Faults in the general scheme and suggestions for the future. The order that a man was to be censused where "he took his meals and was living" was a bad one; for many people I find do not do both at the same place. For instance, it is not uncommon for a master to make his out-door servants sleep in turn (as a guard) in the house; these men usually living out get their food at the house on these occasions.

I think the general scheme of a census to be taken on any one day is impossible of accuracy. No supervision worth the name is possible, and detection of errors if they have occurred is also impossible. It was also a grievous error to entrust the preliminary census of three hundred houses to one man and then split these up into three charges at the final. The only chance of accuracy is to give the same charge to one man for preliminary and final census and let him acquaint himself with the work he has to do.

Size of block. In future one block should not contain more than seventy-five houses in close proximity and the man who makes preliminary should also make final census.

Form of Schedule. I have not any thing to say in favor of the schedules. The name of the Enumerator in the corner when one man took the preliminary, and perhaps he and two others the final census, was a mistake. "Age last birthday" is of course no use whatever. The column "Religion" has been I expect filled up any how. The poorer people do not know their own religion, and the Enumerators being caste people would certainly be at very little trouble in the matter, and I cannot conceive the purpose of the column 8 "Mother tongue." "Place of birth" was a most misleading heading as corrected subsequently. The instructions as regards occupation were very voluminous and not plain, and in fact the instructions were not simple enough; those to Enumerators were far too long.

The travelling population should have been censused by others than the Enumerators.

Private Schedules. It is not possible to say now how far the use of private schedules can be extended, for we have no return of the number used, but the writing population of Ganjam is very small indeed.

House. I do not think the definition of "house" was good. All the servants living in separate houses in the compound of my house are entered with their families as dwelling in my house, but if it was intended to get at the number of dwelling houses in the land, there is no reason why these houses should have been excluded.

Agency. That to be obtained here is very lacking intelligence. Only paid agency can be expected to work well. The census was most obstructive to all other business.

Demeanour of people. There was nothing noticeable about the demeanour of the people. They mostly believe this is preliminary to the impost of a new tax.

General accuracy. I think the general accuracy of the census more than doubtful. In my own case I found at the final census a servant's child that was drowned more than a year ago was in the preliminary census form.

In the case of six villages censused by me and by the Pooree Collector's people, there is a difference as shown below:—

Villages.	As per my Census.		As per Pooree Collector's Census.	
	Males.	Females.	Males.	Females.
1. Mohulia	3	...	3	
2. Ankula	8	8	10	11
3. Rajanapalli	10	8	11	6
4. Sakara	8	9	8	9
5. Sabulia	6	10	7	12
6. Madhavapalli	16	19	18	19

It came to my knowledge that several officers travelling that night (17th) on duty were not censused. The Senior Assistant Collector, however, thinks it accurate. Mr. MacCartie also reports the hill census to be accurate.

The hill tracts were specially treated, from ignorance of the people and their want of civilization any attempt at a synchronous census would have raised a scare, and from the wildness of the country and the scarcity of people able to write it was impossible.

The following are my Senior Assistant Collector's suggestions for future census. I concur with him in the first part, but think it much better that one man should do both the enumerations if the census be synchronous:

Suggestions for the future.

"The most striking feature in the arrangements of the last census has been the multitudinary and often contradictory orders received from Madras up to the last moment; if the meanings of the various columns of the schedule had been clearly defined long before the commencement of the preliminary enumeration, much confusion would have been saved and there would be a greater chance of accuracy. On account of the number of the enumerating staff, many changes occurred in it between the two enumerations. I do not see any object in limiting the time for the preliminary enumerations to one fortnight. If the time was extended, the enumeration of each village could be performed by the Karnam and Karji alone, and the present difficulties in getting capable Enumerators and determining their blocks would not arise until the final enumeration."

Report from C. T. MACCARTIE, Esq., C.S., the Special Assistant Agent, Ganjam, dated 4th May 1881.

As regards future operations I am unable to devise any better plan than that which has been adopted on the present occasion; the circumstances of the country preclude the possibility of a synchronous census, which would not only be enormously expensive, owing to the necessity for importing a large body of Enumerators at high rates of pay, but would be extremely hazardous from a political point of view, as there is no doubt the Khonds would take fright at any attempt of strangers to number them, and at the very least would retreat to their jungle fastnesses even if they refrained from laying hands on their inquisitive tormentors whose labors would certainly be misinterpreted; as it was, I was strongly advised to leave the Kutiah Khonds alone on the present occasion; but the result has proved the correctness of my surmise that there would be no risk provided the enquiries were left entirely to the Patros.

The schedule adopted has the merit of simplicity, and there was no difficulty experienced by even the densest of a dense race in comprehending its requirements; the check appears to me to have been sufficient for the purpose, and the Sub-Magistrates, especially two of them, deserve much credit for their exertions in the way of general supervision which demanded constant itineration during a very unhealthy season.

Agency.

The appended form contains particulars of the Government agency employed, which was all unpaid. The feudal chiefs and their establishments have not been included, as the Patros were left to compile their registers in their own way, and there is no information at hand in regard to the precise agency which they employed. Other non-official Enumerators do not exist either voluntary or for hire, owing to the rarity of literate persons. Each Patro retains, as a rule, the services of a man who can read and write, but in many muttas he will be found to be the only educated person.

Demeanour of the people and accuracy or otherwise of the census.

The Sub-Magistrates are unanimous in describing the attitude of the Khond population in regard to the census as unsuspicious and unobstructive. Pains were taken to remove all doubts as to the objects of Government before any actual steps were taken towards an enumeration, and the people were completely satisfied that there were no designs on foot against either their persons or pockets; a few unimportant questions were occasionally asked as to the meaning of the trouble which was being taken. But the headmen showed no hesitation whatever in coming forward with details of houses and inhabitants in each man's village. Trouble was anticipated by some in dealing with the Kutiah tribes, but it is satisfactory to be able to record that their demeanour was absolutely devoid of suspicion, their Majjis coming forward with information with great alacrity. The case was far otherwise ten years back, as the then Sub-Magistrate's attempts at enumeration were sternly repulsed, and an outbreak was considered imminent.

As stated above I believe the present census to have attained a very fair measure of accuracy, at least as compared with its predecessor, first on the score of the comparative rapidity with which it

was carried out—three months as against three years; and, secondly, because of the revision and the generally intelligent character of the supervising agency.

Physical geography and climate.

The hill tracts of this district may be roughly described as an elevated plateau about 3,000 square miles in extent that slopes west from the ridge of the Eastern Ghâts to the plains of the Central Provinces and the low-lying taluks of the Jeypore Zemindari; they are bounded on the north by Orissa, on the west and south by the Central Provinces and the Jeypore Zemindari, and their east limit is the chains of mountains known as the Eastern Ghâts, the highest peak of which is a trifle under 5,000 feet.

The Goomsur and Pedda Kimedi Maliahs have been a good deal cleared and extensive plains are to be found there in many parts, but the characteristic of the Chinna Kimedi Maliahs is heavy sâl forest covering frequent and high ridges which are intersected by numerous narrow villages. The climate varies from severe cold during December and January to great heat in May; the monsoons are pleasant, but from July to December very unhealthy, owing to the prevalence of malarious fevers of a bad type, which affect all classes of the community, but especially unacclimatised fresh comers; affections of the spleen are thus very common, and diseases of the respiratory organs, which seem to be favored by the general lowering effect which malarious fevers produce on the human system. The chief monsoon is the south-west—June to the end of August; but there is also a good deal of rain during the north-east monsoon, which generally bursts early in November and lasts for about a month.

Food.

The staple food of the Oriahs is rice and of the Khond also during the two or three months that succeed the harvest. In February they gather the crop of hill dholl (kandols), which eked out with dry Mohwa fruit, fresh mangoes, and mango stones ground down to a sort of flour, suffice to pull them through the hot weather, with the help of various yams and edible roots that are plentiful in the jungles. When the south-west monsoons set in dry crops consisting of millets, hill paddy and Indian corn are sown, which ripen from August on, and thus afford plentiful means of subsistence. The hot weather is generally called the Sukki Kalo, or hungry season, as the people are rather pinched just then.

Rice is the only wet crop largely grown, but there are a few patches of sugar-cane cultivation in the Goomsur Maliahs; a little wheat is to be found in Pedda Kimedi on dry land; the yield is poor and the straw very light. Cinchona has been tried, but refuses to germinate, owing to want of sufficient elevation; coffee grows well in private gardens, but can never be profitably introduced owing to the absence of water on otherwise suitable hill sides.

The bulk of the crops produced consist of hill dholl, Indian corn and millets, of which there exists a great variety known as ragi, sua keeri, kanga, with other local names. Grams of various sorts—black, green, and horse—do well, and the castor-oil plant attains a great size; there is a good deal of traffic in this seed as also in mustard (*Tila*) and niger (*Ramatila*), which constitute a frequent cold weather; second crop sown generally in September after the ragi or koeri has been reaped.

Turmeric (Holdi) is perhaps the most valuable crop which the Khonds raise, as it is the most laborious in consequence of the time it takes to mature—two full years, and the constant field-work thus entailed, first in sheltering the young plants from the sun by artificial shade, and afterwards in digging, boiling, and burnishing the root for market. Tobacco is raised much as in the low country and calls for no special remark; it is generally grown in backyards, as elsewhere, and a good deal of care is devoted to its cultivation, as the Khonds are inveterate smokers. Among the products of the jungles may be included myrabolams (Horada), tassar silk cocoons and dammer, all of which are bartered by the finders to trading Panos in small quantities generally for salt.

Cultivation.

Wet paddy is of course grown in the valleys and low-lying bottoms where water is available, and much ingenuity is exercised in the formation of bunds to retain the necessary supply of moisture. The Khond has a dead eye for a natural level; it is surprising how speedily a seemingly impracticable tract of jungle will be converted into paddy fields by a laborious process of levelling by means of a flat board attached to a pair of buffaloes.

The chief feature of the dry cultivation is the destructive practice of kumeri, which needs no description. A strip of forest, primeval if possible, as more fertile is felled, burnt, cultivated, and then deserted for a term of years, which may vary from 3 to 30, according to the density or otherwise of the population. In the Goomsur Maliahs, where the population is thick, the rotation is frequent; in Chinna Kimedi a generation may elapse before reversion to a previously tilled piece of forest.

The Kotiah Khonds, numbering about 5,000, are the chief offenders in respect of kumeri, to which they confine themselves, as they have no ploughs or agricultural cattle, and their sole tools is the speed with which they dibble the seeds of millet and Indian corn into the hill sides. In the rare instances, when they do grow a little rice, the fields are prepared by manual and pedal labor, as men, women and children assemble in the field and puddle the mud and water until it assumes the desired consistency for the reception of the seed. I need hardly add that under this primitive system the breadth of paddy cultivation in the Kotiah country is exceedingly limited.

Clothing.

Khonds and Panos dress very much alike; the hair is worn long during childhood, but tied into a club when maturity is reached, and turbans are seldom worn. A narrow cloth is bound round the loins with Tartan ends which hang down in front and behind, and a coarse longcloth is wrapped round the figure when the weather is cold. The war-dress of the Khonds is elaborate and consists of a leather cuirass in front and a flowing red cloak which with an arrangement in bison horns and peacock's feathers is supposed to strike awe into the beholder's mind. Khond women wear a red or parti-colored skirt reaching the knee, the neck and bosom being left bare except during pregnancy. Pano females generally wear an upper cloth. All tattoo their faces, and ornaments of beads and brass bangles are invariably worn, though the usage of diverse muttas varies very much.

In some parts of the Goomsur Maliahs the use of glass and brass beads is confined to married women, virgins being restricted to decorations composed of plaited glass. Matrons wear 10 or 12 earrings of different patterns, but in many parts young girls substitute pieces of broom which are worn

till the wedding day and then discarded for brazen rings. Anklets are indispensable in the dance, on account of the gingling noise they make, and gold or silver noserings are very commonly worn.

Habits and mode of life.

The Panos, also known by the title of Dombo or Sitra in some parts, are supposed to be Pariah emigrants from the low country; their profession is weaving or brass work, the monotony of which they vary by petty trading in horns, skins and live cattle, and occasionally enliven by house-breaking and theft at the expense of the Khonds, who have an incautious trick of leaving their habitations utterly unguarded when they go off to the hills to cultivate. The Panos are drunken, immoral and dirty in their habits. The Khonds refuse to eat with them, but I don't find that this objection extends to drinking, at which both Khond and Pano display surprising capabilities. Panos are also the professional musicians of the country and attend weddings, deaths and sacrifices in this character, for which they are recompensed with food, liquor and cloths.

The Khonds are very energetic in their agricultural pursuits, and appear to lead a steady life during the chief field operations of the year; they are also very keen in the pursuit of game, for which the hot weather is the appointed time, and during this period a samber or bison has but little chance of escape if once wounded by an arrow, as they stick to the trail like sleuth hounds and appear insensible to distance or fatigue. The arms they carry are the bow, arrows and tangi, a species of light battle axe that inflicts a serious wound.

The women are not addicted to drink, but the males are universally attached to liquor, especially during the hot weather when the sago palm (Solopo) is in full flow. They often run up sheds in the jungle near, especially good trees, and drink for days together. A great many deaths occur at this season by falls from trees when tapping the liquor. Feasts and sacrifices are occasions for drinking to excess, and the latter especially are often scenes of wild intoxication, the liquor used being either Mohwa or a species of strong beer brewed from rice or koeri. Khond women when once married appear to keep pretty straight, but there is a good deal of quiet immorality among the young men and girls, especially during the commencement of the hot weather, when parties are made up for fishing or the collection of Mohwa fruit and other jungle berries. At the same time a certain sense of shame exists, as instances are not at all uncommon of double suicide when a pair of two ardent lovers are blown upon and their *liaison* discovered.

Houses and health.

The generality of Khond and Pano houses are constructed of broad sâl logs hewn out with the axe and thatched with jungle grass, which is impervious to whiteants. In bamboo jungles of course bamboo is substituted for sâl, and the Uriyas invariably confine themselves to upright logs planted as close together as may be and plastered over with mud. The Khond houses are substantially built but very low, the pitch of the roof never exceeding 8 feet and the eaves being only about 4 feet from the ground, the object being to ensure resistance to the violent storms that prevail during the monsoons.

The form of the village is a long street, and the Panos generally affect a detached quarter known as "Dombo Sai."

The surroundings are filthy in the extreme and sanitary arrangements are distinguished by their absence, and deficiency in this respect does not appear to affect the people's health. Cholera is unknown and small-pox is not specially prevalent; fever is common, but malaria accounts for that. Itch of a bad type is very common among the Panos, and the Khonds also suffer a good deal from leprosy, which I ascribe to their neglect of ablution. On the whole the health of children and adults compares favorably with the low country. The hardships of their life, of course, causes considerable infant mortality, but the survivors are certainly a hardy race.

Child-bearing.

Women suffer very little in labor, during which they are unattended and untouched by other women until the fifth or seventh day when bathing takes place. A month after birth the child's head is shaved and the relatives feasted. At two months it is carried for a day or two to visit its maternal grandfather, when more feasting occurs and a sort of Baptismal ceremony is inaugurated, in which the slaughter of a fowl plays the principal part after it has been passed through the infant's hands.

Marriage, intermarriage, and divorce.

Intermarriage between Khonds, Panos, and Uriyas is not recognized, but cases do occur when a Pano induces a Khond woman to go off with him. She may live with him as his wife, but no ceremony takes place. If a Pano commits adultery with a Khond married woman he has to pay a paronjo, or a fine of a buffalo to the husband (who retains his wife), and in addition a goat, a pig, a basket of paddy, Re. 1, and a cavady load of pots; if the adulterer is a Khond he gets off with payment of the buffalo which is slaughtered for the entertainment of the village. The husband retains his wife in this case, as also if he finds her pregnant when first she comes to him; this is not an uncommon incident. Divorce of the wife on the husband's part is thus very rare, if it occurs at all, but cases are not unknown where the wife divorces her husband and adopts a fresh alliance. When this takes place her father has to return the whole of the gifts known as gontis which the bridegroom paid for his wife when the marriage was originally arranged.

The marriage ceremonies of Khonds, Panos, and Uriyas differ in minutiæ, but two broad features are common to all alike—first is the notion of capture which underlies the acquisition of a bride, reminding one of the old Sabine rape, and secondly the universal custom of paying "gontis" or presents to the girl's father by the bridegroom's representatives. Preliminary arrangements for the marriage are always made by the fathers on both sides when they exist, in their absence by the nearest male relatives of the couple. The bridegroom's father agrees to pay such gontis as his means afford; these usually consist of buffaloes, goats, cows, pigs, and brass utensils. A preliminary feast is made by the girl's people and the contracting parties separate until payment of the gontis, after which the marriage day is arranged and preparation made for festivities on an extended scale. The bride is decked in red cloths, bangles, noserings and bracelets, and the pieces of broom are now removed from her ears and brass or silver rings substituted, after which she is enveloped in a red blanket and carried pickaback on her uncle's back towards her husband's village surrounded by a bevy of her maiden companions who dance along to the accompaniment of a band. Among the Goomsur Khonds the rear is

brought up by a procession of brass images of cattle, horses, &c., which are presented to the bride by her people with gifts of utensils, cloths and ornaments.

As the bridal procession nears their destination it is met by the bridegroom with the young men of his village, each armed with long bundles of bamboo for the purpose of warding off the vigorous onslaught of the young women about the bride, who defend her from the bridegroom's attack by showers of large stones and other handy projectiles. This not altogether mimic warfare continues until the village boundaries are reached. When the girls desist peace is restored and the festivities are carried far into the night by the aid of dance and song. Such are the main features of a Khond marriage. Among the Uriyas the bride is led and not carried, while with the Panos the preliminary payment of the gontis is not an indispensable antecedent. They may be paid up at any subsequent period, provided the agreement is duly made.

Education is provided for by the establishment of 16 Primary Government schools in the hill tracts in which Uriya is the sole language taught. The bulk of the attendance is Uriya, the numbers on the roll at the date of the last report being Uriyas (451) and Khonds (166). The vast majority of the population is illiterate, and there is very little desire for knowledge, especially among the Khonds

Social distinctions.

There is close communication between the Panos and the Khonds, as the former acts as the advisers of the latter in all cases of doubt or difficulty; but they do not intermarry, nor do they eat the same food, although they drink together. The Uriyas live apart from both and mix but little with either, except on the occasion of sacrifices or other solemn assemblages, when buffaloes are slaughtered for Panos and Khonds, and goats or sheep for Uriya visitors.

Occupation of women and children.

Among the Khonds women and children assist the males during the cultivation season by weeding, transplanting, and clearing the ground of scrub jungle. Pano women also do field work and in addition help their husbands to spin the thread which is destined for the loom.

Uriya women confine themselves to rendering aid at transplanting time or after harvest when they glean the reaped fields; at other times they busy themselves with house work, or, if poor, in hawking small supplies of salt from village to village.

Relation of cultivators to soil.

The Khonds are the original proprietors of the soil, which they cultivate in absolute freedom from all taxation. In ancient days their possession was absolutely intact, but the introduction of the Uriya element, as time went on, led to the alienation of large tracts from the original proprietors who thus remunerated the Patro and their dependents for the services which they were called in to render.

In addition to these ancient grants a good deal of land has been sold by Khond proprietors to other castes; it was in this way that much territory was found some years ago to be passing into the hands of the Sundis or professional liquor distillers. As soon as these facts were brought to the notice of Government no time was lost in the adoption of repressive measures which have been completely successful, as the recent census shows a great reduction in the numbers of these Sundis who, now that their unscrupulous trade is abolished, have emigrated largely to Boad and other tracts. This is the only case to my knowledge in which a special trade has decayed and with the best results, as had it not been so there is no doubt that the Khond population would very soon have degenerated into pure adscripti glebæ and the Sundis become the landlords.

The cultivation of the soil is intimately connected with the Khond ideas of religion, which is pure demonology, the earth being watched over by a goddess named "Tara Penu," an incarnation of Siva, the destroyer, whose constant cry is for blood under penalty of sterility if withheld; hence the addiction of these tribes to the barbarous rites of human sacrifice which has now, happily for the interests of humanity, been suppressed, the cravings of the blood-thirsty goddess having per force to be satisfied with the sacrifice of buffaloes, which are annually slaughtered much in the same manner as the human victims were at the annual ceremonies known as "Pudho Puja."

Vizagapatam District.

Extract from a report by H. G. TURNER, Esq., Acting Collector of Vizagapatam, dated 8th September 1881.

The use of the term house.

Some difficulty was experienced in making the Enumerators understand what is meant by a house for census purposes. A house was first understood to include all buildings within one compound or enclosure. It was afterwards decided that even parts of a house occupied by separate families separated by partition walls and having separate gateways into the street should be treated as separate houses and numbered accordingly. Hence the numbers originally affixed had to be altered. This was done by affixing sub-numbers such as 32A, 32B, and so forth.

After the houses were numbered by the village officers they were carefully examined by the Superintendents and any mistakes found were rectified. The fort at Salur was first entered as one building and only one number was given to it. At the time of preliminary enumeration the houses in the fort were separately numbered and censused accordingly, a sub-number being given to each of these houses.

Difficulties met with.

Previous to the date fixed for the final census, due notice was given to the public requiring them to leave an adult male member or some other person at their houses till the Enumerator visits them to give the necessary information required for filling in the schedules. This requisition was universally obeyed, and no difficulties whatever were met with

Faults in the general scheme and suggestions for the future.

by the Enumerators in their proceedings. I do not see any faults in the general scheme, nor do any suggestions occur to me for future census. The present scheme seems to me to be the best that can be adopted.

Size of block. Suggestions for the future.

As a rule, for final enumeration, the number of houses in a block should not exceed 100. Owing to the difficulty in getting a sufficient number of Enumerators for the preliminary enumeration some of the blocks were uncommonly large. The time allotted for this enumeration being long enough, the Enumerators however managed to complete the work. This arrangement seemed unsuitable for final census, which had to be finished in a single day. Hence additional hands were employed to assist the Enumerators appointed for the first enumeration, and at the final census each Enumerator had not more than 200 houses to census.

Time of numbering houses.

I have no remarks to offer on the time and method of numbering houses, nor on the form and size of schedules and Enumerators' books. The only objection to the time in which both the preliminary and the final census were taken is that they fell in and lasted throughout the time prescribed for the collection of the Government revenue and the Zemindari rents. As almost all the village officers and a great number of the taluk officers of the Revenue Department and of the Zemindars were employed in this work, the collection of revenue was greatly retarded.

Private Schedules.

The number of private schedules issued was 279. These were distributed only to the English-knowing people. For the future I would suggest that the instructions for filling in private schedules be given in Telugu and English and in sufficient time before the preliminary and final census, so that they may be distributed to all who are able to read and write.

Demeanour of the people.

As usual the people at first apprehended that the census operations were a preliminary step to the imposition of some kind of tax or other. But the taluk officials used their best endeavours to disabuse the public mind of such ideas, and by the time the final enumeration commenced people generally understood the real object of census. Hence no obstacles were thrown in the way of the Enumerators obtaining the necessary information and no opposition was met with.

Accuracy of the results.

The taluk officers are of opinion that the census was accurately taken in the ordinary tracts. But the altogether different form of census adopted for the agency tracts probably impaired the accuracy of the census in the ordinary taluks bordering on the hill tracts. It is likely that people who went into the hill tracts from the ordinary taluks bordering on them, on the day of final census, were nowhere censused, and also that men who came into the ordinary taluks from the hill tracts were twice entered. But such cases must be few and could not materially detract from the general accuracy of the census otherwise well conducted. It is impossible to provide against this error, except by introducing the same system of census into the hill tracts, which is not practicable in the present state of that country.

Perhaps the error may also be guarded against by directing that persons who went into, or came from, the hill tracts temporarily should not be omitted or added in the final census in the ordinary tracts.

Agency tracts.

The census in the Agency tracts of this district was conducted on a much simpler form for obvious reasons. It is however an improvement over the census of 1871. It was not synchronous with that of other parts of the district. It was commenced on the 1st January and was closed about the middle of August. Here only one enumeration in the form of preliminary census was taken. No final census was taken and no attempt was consequently made to census the floating population.

Mr. Moore seems to have taken great pains to give as good a census as circumstances permitted of the hill population in the taluks of Jeypore, Koraput, Nowrangapur and Malkangiri is enclosed. Having myself conducted the census of 1871 in the hill tracts, I am a competent judge of the great difficulties he has had to contend with. I would ask attention to the interesting confirmation of the accuracy of my rough and ready census that is afforded by Mr. Moore's more elaborate work.

Godavari District.

Extract from a report by W. S. FOSTER, Esq., Collector of the Goddvari District, dated 3rd November 1881.

Difficulties met with.

I may on the whole say that no difficulties were met with in conducting the census, either the preliminary or the final. With reference to your circular letter of the 27th January 1881, No. 1041, I have obtained special reports from all parts of the district as to whether any difficulty was experienced in obtaining the necessary information for the census, owing to the absence of the men from their houses, and nowhere was any such difficulty experienced. A notice was published in the Gazette and by beat of tom-tom in the several villages that the householders should have one adult male member in the house on the day of the census until the Enumerator went round, and I have no doubt this had some effect. Among the lower classes the adult males were not invariably waiting for the Enumerators, as some had to go out for their daily work; but in such case the women gave the required information, and there was therefore no difficulty. There was a difficulty in deciding as to how the people of the Goldsmith caste should be entered in the schedules in the column of caste. A great many of them, particularly the people in the Ellore, Tanuku, and Yernagúdem Taluks, sent in petitions contending that they ought to be entered as Brahmins, as they belong to the creation of Viswabrahma, and that they are called by the names of "Kamsalies," "Kammaras," and "Kancharas," from their occupation, according as they work in gold, iron, brass, &c. They even produced some pamphlets made by the learned men of their caste in support of their argument. These people are always held by the other classes to belong to one of the several sects under the general head of Sudras

and they were at first entered as such in the schedules. The people having objected to this, the difficulty was to some extent overcome by entering them in most cases as Kamsalies, Kammaras, Kancharas, &c., instead of showing them either as Brahmins or Sudras. Many of them however were satisfied with this.

Suggestions for the future.

I have nothing in particular to say as to the faults in the general scheme and suggestions for future operations. I would suggest that all instructions for the guidance of the Enumerators should be issued once for all, and we should not go on changing them till the day of census, as otherwise the large mass of Enumerators will only be confused with the rules so often altered. The instructions regarding the filling up of the occupation column were not uniformly and well understood. I think it would be well on a future occasion to define the several terms with illustrations. I would particularly quote the case of the Government Zeroyti ryots and the sons and brothers of a registered holder, all living together as members of the same undivided family and taking an active part in the cultivation of the lands held by the head of the family. As regards the first, some considered that they should be entered as proprietors, as they are landholders within the meaning of the Rent Recovery Act, and as they can do what they like with the lands as any other landholders, while others thought they ought only to be entered as occupants, as the Government have the right of altering the present settlement after 30 years. As regards the latter case it was thought proper by some to enter them in the same way as the head of the family was entered while others thought it proper to enter them as occupants, showing only the head of the family as proprietor. The rules will have to be made clear in such cases.

Again the case of the great Pundits, who know very well the Vedas and Shastras but cannot read their own language and can only sign their names, requires some consideration. As the rules are we have to say they "do not know." If we say so our accounts will give us a wrong idea of number of the educated men. They cannot read and write, but they do not like to be entered as if they were quite ignorant.

I think the form and size of the schedules and Enumerators' books need no comment.

Use of the term "house."

No definition of the term "house" was given before the numbering of houses was begun. All distinct houses that were occupied by separate families were separately numbered. When the work was done on this principle generally to a great extent, *i.e.*, in the month of August, the Board's Proceedings of the 7th July 1880, No. 918, was received. In this a house was defined as a dwelling house with all the out-houses belonging to it forming one block, whether occupied by one or more families. This was acted upon in doing the rest of the work. Again on the 13th September 1880, by which time the numbering of houses was probably all complete, the Board's Proceedings of the 4th September, No. 1278, was received, in which the Government of India's definition as to the term "house" was the "dwelling place of one or more families with their servants having a separate principal entrance from the public way" was ordered to be adopted. I cannot think that any alteration was made with reference to this rule. Later on, *i.e.*, few days before the preliminary enumeration was to begin, was received the Board's Proceedings of the 28th October 1880, No. 1628, directing that a house which was originally a single one, but divided by partition walls, should be numbered separately, whether they have one or more entrances from the public way. This order, however, was not published, as it would only be throwing matters into confusion, and as the Enumerators who were about to begin with the preliminary enumeration were to understand by the term "house" as any building to which a separate number had been affixed. I am told that when giving an account of the census operations in this district to the Census Commissioner, who was here on the 30th of November, the mode in which the houses were numbered and the fact that no effect was given to the order for the above reasons were brought to his notice.

Private schedules.

No account was kept of the number of schedules issued to be written out by the parties themselves, and no information is therefore available on this subject. But I have no doubt as to the possibility of extending this practice on a future occasion, as I trust that in another ten years the proportion of educated natives will increase.

Agency.

I have no reasons to suppose that unpaid agency was anything but satisfactory, so far as we can have sufficient men who are willing and able to undertake the work without payment. We were able to get on with the work satisfactorily without the necessity of employing paid men, except in the Bhadráchalam and Rékapalle Taluks. This was not however without much difficulty. In some cases people refused to act as Enumerators, but the Tahsildars were after all able to induce them to do the work. For a future census there will doubtless be more men available to carry out the work, but I doubt whether there will be more men willing to undertake it for nothing. The Sub-Collector is of opinion that in such towns and large villages with more than 300 or 400 houses, where there will be only persons over whom one has no control, such as Vakils, volunteers in public offices and the like, unpaid agency is most unsatisfactory. He says that "people come forward as Enumerators in the hope either they will eventually get some honorarium, in which case they are of course disappointed, or thinking that their having done so will give them some claim to an appointment hereafter, in which case also disappointment is pretty sure to be the result; however plainly they may be told that no return is to be expected, they naturally disbelieve in work being exacted without some '*quid pro quo*' being intended."

The Enumerators in general possessed fair intelligence, and there is nothing in particular to show that they were not trustworthy.

The demeanour of the people.

Some of the lower orders looked with some suspicion that the census was intended as a preliminary to a new taxation with reference to the number of persons in each house, though however, they all admitted that there was nothing of the sort after the census in 1871. When the intention of Government was fully explained, most of the people were reassured and there was no misunderstanding. In a very few cases people seem to have hidden themselves or some of their children to evade enumeration, either from fear that they would be taxed, or from superstition that if the names of all their children were given out there would be a loss among them. In such case the people were at once made to under-

stand that there was no reason for any such fear. The Sub-Collector brings to notice two cases in which there was, if at all, any obstruction. One was that of a number of tank-diggers assembled at a distance from their own village, and the real cause of this could not be ascertained. The other was "that of the retinues of certain Zemindars who were in Rajahmundry on the day of the final enumeration, their masters having come in then to have an interview with the Special Commissioner for Hill Tracts. They gave a great deal of trouble, as might have been expected, being strangers to the place and to the Enumerators, and not understanding why, having been (preliminarily) enumerated at home, they should have to go through a second course of inquiry." With the exception of these there was no obstruction or opposition offered anywhere in taking the census.

Accuracy of results.

It was once decided that on an average we may suppose an increase of one per cent. per annum in the population. According to this theory the results of the present census ought to show an increase of about 10 per cent. in the population over the figures of the census taken in 1871. The rough statement of population sent by you shows that there is an increase of a little more than 10 per cent., and I therefore consider that we may accept the results of the present census to be very nearly correct as to the total population. In the Yernagúdem Taluk, the Tahsildar, owing to some misapprehension, appointed Special Enumerators at three places for the enumeration of the people in the boats on the Ellore Canal. I am glad, however, that the Special Enumerators did not count the people independently of the Department of Public Works Enumerators, and consequently double counting was avoided. At Dowlaishweram the people in a few houses within canal limits were counted both by the village officers and the Department of Public Works Enumerators. The mistake having been, however, discovered, the people were struck off the schedules prepared by the village officers. With the exception of these no other cases in which any mistake was made in counting were brought to notice. The Head Assistant Collector thinks that some mistakes were made in filling up the occupation column, particularly in classifying the agricultural population, owing to some misapprehension of the rule on the subject as stated above. This may be the case to some extent in the other parts of the district, but as the schedules were all carefully corrected as far as possible both by the Superintendents and Division Officers, I cannot think that the mistakes would be so many as to make a material difference.

Kistna District.

Extract from a Report by G. MACKENZIE, Esq., Acting Sub-Collector in charge Kistna District, dated 18th October 1881.

Notices were issued by publication in the District Gazette and in villages calling upon all intelligent and English-speaking persons to fill up the schedules for their households, and they were supplied with the necessary forms. Notices were also issued requiring the residents to leave a male adult in their houses on the day of final census until the Enumerator came round. This requisition was universally complied with.

Difficulties met with in different cases.

In Zemindari villages there was some difficulty in making the village officials, on whom the Census work chiefly devolved, do the work more willingly, as the staff was ill-organized and ill-paid and consequently not zealous. It cannot be obviated until the position of the officials is ameliorated and made more amenable to the Revenue authorities. Some difficulty was also experienced in the enumeration of gosha females. In other cases the work went on easily.

Faults in the general scheme, suggestions for future operations, and size of blocks.

The scheme adopted was a great improvement over that followed in the Census of 1871. But with a view to ensure more accuracy in future operations, I would suggest that each block should contain not more than 125 houses, each circle not more than 12 blocks, and each charge not more than 5 circles.

I would, as a rule, leave to the village officials the enumeration of population residing, or travellers sojourning, in their respective villages, and would invariably employ Special Enumerators to count travellers passing on high roads without burdening the village Enumerators with this work. For this purpose each road may be divided into convenient blocks or reaches, the length being determined as may be expedient in each case, and some special rules, as in the case of canal population, may be framed.

Where the ranges of Tahsildars and Deputy Tahsildars exceed five Supervisors' circles, Assistant Superintendents may be appointed. The Supervisors and Assistant Superintendents should be Government officials, who would carefully attend to the work on pain of dismissal from the Government service. In villages containing two blocks or not more than 250 houses, the enumeration can be conducted by the Kurnams and Munsifs, and, where this number exceeds, Assistant Enumerators selected from the villagers may be employed to work. In towns and other places where a large number of gosha females prevails, some intelligent non-gosha females may be employed as assistants to help the ordinary Enumerators in censusing the gosha females.

I think that rules for the guidance of Census Officers should be published a year before the final Census, so that all officials and non-officials might easily comprehend them and be ready for the work when required. On the last occasion the rules were published not sufficiently long before the commencement of preliminary operations, and subsequently changes were made which produced some confusion.

The time and method of numbering houses.

The houses may be numbered permanently, the numbers being marked on the doors of the houses, or wooden boards of small size, showing the numbers, being fixed in some conspicuous part of the house where it has no wooden doors. The expense for this work will be but small and can be easily borne by the occupants or owners of buildings. The register of buildings may be permanently maintained in villages, and the

Tahsildars and Revenue Inspectors during their inspection of villages make it part of their duty to examine the house registers and see that no omission is made in the registry. This procedure will not involve much labor, but will, on the other hand, obviate the necessity of numbering and registering a vast number of houses during the short period of Census operations and simplify the arrangements for taking the Census.

The form and size of schedules and Enumerators' books.

The schedules and Enumerators' books may be of the same size as that now adopted, but I propose an additional column in the form, showing the relationship of the different members of a family.

House.

The definition given by the Government of India for the term "house" was communicated in September 1880, after the numbering of houses and house registers were completed. But this, however, did not necessitate much alteration in the work already done. The only deviation to be noticed was in the case of houses of different families situated in an enclosure which has one entrance from the public way. Here the building occupied by each family was treated as a house, but, according to the Government of India's interpretation the whole enclosure was to be treated as a single house. Such instances, however, are not numerous.

Private schedules issued.

Three thousand private schedules were received from Madras in the latter part of January and distributed over taluks and Municipalities. Of these about 1,000 appear to have been issued. As the requisition was too late, their use was much limited. It may find extension in towns where education is in advancement, but not in rural tracts where the population is for the most part illiterate.

Agency.

The advantages of unpaid official agency are economy and intelligent and trustworthy performance of the work. Non-official unpaid agents were necessarily few and select, but still we could not expect a thoroughly satisfactory result from them.

Demeanour of the people.

In the beginning some of the lower classes of people viewed the operation as prelude to a new taxation, but subsequently they were disabused of their suspicions, the objects of the Census being fully explained and understood.

Opinion as to the general accuracy of the results of the Census.

From the manner in which the operations were conducted, I am of opinion that the results were generally accurate.

Nellore District.

Extract from a Report by J. GROSE, Esq., Collector of Nellore, dated 24th January 1882.

Difficulties met with.

No difficulty was experienced in carrying out the work, except that a careful scrutiny had to be made into the work done by the Zemindari officials over whom Government officers could exercise little or no control. The legislation of the Census Act of 1880 however supplied to some extent this want of power.

Size of block and form of Schedule.

The experience gained in the present census shows that for the facility of enumeration no more than 100 houses should be allotted to an Enumerator in the final enumeration, and no more than 200 in the preliminary enumeration, unless when a village contains a few houses more or less which renders it inconvenient to divide it into two blocks. The form of schedule supplied answered its purpose well.

Fault in the general scheme and suggestions for the future.

The instructions were changed in some respects too near the time of the census (that is circular letter No. 533, dated 13th November 1880). Experience seems to me to have shown that the attempt to get description of occupations at first hand by letting the Enumerators enter what they liked or were informed caused great difficulties. The same occupation is called by different (local) names in different villages. It is difficult to discover the real meaning of such terms even at Nellore and must be much more difficult in Madras. After the preliminary enumeration was completed the Supervisors tested a certain percentage of schedules in every block and submitted them through their Superintendents to the Divisional Officers, who examined them by house-to-house inspection in some villages, giving the necessary instructions on the spot to the Enumerators concerned. When the final enumeration was made the Supervisors and Superintendents watched the work of the Enumerators and when it was over they selected certain schedule books in each block and tested the entries by going to the dwellings concerned.

Use of the term "house."

"House" was defined to be "the dwelling-place of one or more families with their servants having a separate principal entrance from the public way." Questions were raised by some Superintendents as to whether outhouses attached to a main building but having a separate entrance from a public way should be treated separately or not. It was decided that they should not. I suggest that "house" may be defined to have a wider meaning in the future censuses so as to include the out-houses above referred to.

Agency.

The only advantage derived from the employment of unpaid agency was on the score of economy. Unpaid non-official Enumerators discharged their duties with apathy. It would therefore be better, so far as this work is concerned, to employ paid agency and officials alone in the census work.

The agency employed in the district was of ordinary intelligence. It is reported that the work turned out was trustworthy.

The demeanour of the people.

People in certain localities of the district apprehended at first that a poll-tax would be the effect of the census But these suspicions disappeared as the Enumerators explained the real object of the work.

Opinion as to the general accuracy of the results.

The entries made in schedules were on the whole accurate, as every precaution was taken to enumerate all classes of population simultaneously The separate enumeration of the resident and floating population considerably facilitated the work; but as no provision was made for censusing the travellers moving on roads before they reached a halting-place, it is feared some comparatively very few may have escaped enumeration.

Cuddapah District.

Extract from a Report by L. E. BUBROWS, Esq., Acting Collector of Cuddapah, dated 10th September 1881.

Faults in the general scheme and suggestions for the future.

Great difficulty was experienced by the Divisional Officers and Tahsildars in putting the somewhat complicated instructions required to be given to Enumerators into their heads and seeing that those instructions were thoroughly carried out. The difficulty was increased by alterations and modifications being introduced in the rules from time to time. The rules ought to be as simple as possible, and no alterations ought to be introduced after Enumerators have learnt them. The system of issuing private schedules has been found to work well and should be encouraged; the low state of education in this district does not admit, however, of its being utilized to any large extent in rural tracts. The system of issuing tickets to travellers was also a success, as it enabled the supervising officers and Enumerators to see that none were omitted from the schedules.

Private Schedules.

Agency.

No difficulty was in any part experienced in procuring voluntary non-official Enumerators. People in this district are generally of a calm and moderate disposition and amenable to orders Many offered themselves as voluntary Enumerators, and those employed did their work satisfactorily.

Demeanour of the people and accuracy of results.

The people were generally calm and not obstructive, and the objects of the census have not been in any way misapprehended. The results secured are, it is believed, very accurate so far as this district is concerned. There have been constant inspections and checkings, and great care has been taken that all particulars recorded should be accurate and that none should be omitted.

Kurnool District.

Extract from a Report by W. H. GLENNY, Esq., Collector of Kurnool, dated 22nd July 1881.

Faults in the general scheme and suggestions for the future.

I do not think the general plan of operations could be improved upon, but there were some faults of detail. There should have been no change whatever in nomenclature. The date of the final enumeration and of every other operation should have been fixed from the outset and adhered to. There should have been no amendments in definition (*e.g.*, of "house," "occupation," "married"), and no petty and unnecessary changes, such, for instance, as the substitution of the full names in red ink, for the initials in black ink, of Enumerators. Nor should important instructions (*e.g.*, in regard to private schedules) have been issued at the eleventh hour. The packing rules were, in my humble opinion, quite unnecessarily complicated, and they were by no means clearly expressed. It should have been remembered that these rules had to reach the understandings of many very stupid men through the medium of versions in very clumsy dialects.

Size of block.

I am of opinion that a block containing *about* 200 houses is a block of proper size for one Enumerator, provided the houses are all in the same village, even though in the term "village" we include the village and the hamlets attached to it.

Use of the term "house."

The term "house" was used in accordance with the definition laid down in the Resolution of the Government of India which accompanied G.O., Revenue Department, No. 957, of 12th August 1880, viz., "the dwelling-place of one or more families with their servants, having a separate principal entrance from the public way." Attention was at the same time paid to the explanation of the term given in Board's Proceedings, No. 1628, of 28th October 1880. The work done by the Enumerators, both at the preliminary and final enumerations, was subjected to close check on the spot by the Supervisors, and again by the Superintendents. The number of cases outside the Kurnool Municipality in which schedules were filled up by occupiers of houses was reported to be 52. I cannot say how many were filled up in the Municipality. I do not recommend any extension of the "Private Schedule" system; that is to say, I should limit it to persons well acquainted with English.

Private Schedules.

Demeanour of the people.

4. With a very few quite unimportant exceptions the people accepted the Census with serene indifference. A few members of the most ignorant and novelty-hating class of the population, viz., the Kurnool Mussulmans, were just at first inclined to opposition: here and there the shopkeepers in villages feared that the enquiries were connected with revision of the License-tax Schedules: in a few instances the professional carriers of the country (Lambadies), who are also professional cattle-lifters for the most part, drove off the Enumerators, ostensibly on the ground of delicate feelings about their women, but no doubt in reality from fear of unpleasant questions as to property in their possession. I think that of those among the villagers who troubled their heads at all about the object of the Census, most believed that we wanted to ascertain the loss of population by the famine. The fact is the mass of the people are by this time sufficiently accustomed to census taking; there will never hereafter be any opposition to the process.

5. Upon this point I can speak with much confidence. I am convinced that throughout our territory the result was thoroughly accurate, and I think the Banganapalle figures may be taken as approximately correct. My opinion as to our own census is founded on extensive and searching personal scrutiny by my Divisional Officers and myself. The Nawáb's figures I must of course take on trust; but from the carefulness and promptitude of his communications in general, and in particular from the fact that in Banganapalle the complicated packing rules were fully carried out, I think the Nawáb exerted himself with success. That he should have done so I am inclined, from what I have seen and heard of him, to think in keeping with his disposition.

Opinion as to general accuracy.

Bellary District.

Extract from a Report by H. P. GORDON, Esq., Collector of Bellary, dated 9th September 1881.

Size of block.

One hundred houses, when they are conveniently situated, appear to form a convenient charge for one Enumerator.

Form of Schedule.

No change in the form and size of the schedules is advocated. They appear to be well suited to the purpose of a census in this country. No accurate account of the number of schedules distributed to private individuals to be filled in by themselves has been kept. The number reported is very small, viz., 143. The instructions for their distribution were received very late, and it was not then clear to what classes it was intended they should be distributed, *i.e.*, whether by English-speaking people was meant people who could speak English, or such as ordinarily used that language. The decision upon this point was received too late to be of use.

Private Schedules.

Agency.

The facility of obtaining unpaid agency varied in an inverse ratio with the intelligence of the people. It would appear to have been anticipated that the converse of this proposition would be found to exist. In towns and the larger villages, where intelligence is considerable, people were found, as appears to me, naturally averse from supplying their labor gratis. In the villages, fortunately, a class existed in the shape of Mirasidars enjoying village service inams, but not in office, from whom co-operation in this labor could fairly be exacted. In the rural tracts non-officials possessing the necessary ability were hard to find, but more amenable to the influence of Revenue officers than in towns.

In the town of Bellary the employment of a large staff of paid Enumerators would have been necessary had not the services of the members of the Revenue Survey establishment been freely tendered and used.

In Municipalities the Commissioners acted as Supervisors; some of them did not always pay that attention to the matter which was desirable, but on the whole gave as much of their time to it as could be expected from gentlemen whose private business is extensive. I am of opinion that one active Government official would have supervised all operations preliminary to the actual taking of the census more satisfactorily than the unpaid agency to which it was entrusted.

The Enumerators in villages are reported to have been generally intelligent and trustworthy men; most of them were village officers and so acquainted with the households which they had to enumerate. No other agency could perform this duty with a probability of equally accurate results.

The demeanour of the people.

The objects of the census were generally understood. The most ignorant of the people in some cases regarded the operations as preliminaries to the imposition of a tax, but offered no obstruction, and were, it is said, convinced by the Superintendents and Supervisors of the real object of the measure.

Accuracy of the results.

The general opinion of Superintendents as to the results of the census is that they are fairly accurate. This opinion is based on the results of tests of the schedules made extensively by the Supervisors, and to a smaller extent by the Superintendents themselves. The point in which it is probably least accurate is that of *age*. That this should be so is a necessary consequence of the frequent ignorance as to their ages of the persons to be enumerated, and of the absence of any means of ascertaining the matter accurately. The Bellary Division Deputy Collector has suggested that Curnams should be required to enter the names of all children born in his birth and death register, with the object of thus providing a means in the future of ascertaining the age of a considerable portion of the population with accuracy. The suggestion is, I think, a good one.

Suggestions for the future.

The scheme of the census leaves, it appears to me, little to be desired, save an absence on a future occasion of the various supplementary orders issued at a late date which so greatly enhanced the labor of this census.

The Deputy Collector, Bellary Division, makes a suggestion, in the propriety of which I agree, viz., that at the preliminary census the name of every ordinary occupant of the house, whether he be present or not, should be included in the schedule by the Enumerator. He points out that it would take much less time at the final enumeration to score out absentees than to write the names and particulars of members of the household who were absent at the preliminary enumeration.

He also urges that if the actual ordinary population of each village could be ascertained from the schedules as originally prepared in this manner and published separately, it would be of much use for administrative purposes.

This latter proposal I do not endorse. The information afforded by the census appears to me to be sufficiently accurate for all ordinary purposes of administration, and if the information be required to be accurate for any particular purpose, it could always be obtained by Revenue officers while the enumeration was in progress without any sensible additional burden being laid upon the Enumerators.

Extract from a Report by J. MACARTNEY, Esq., Agent to the Raja of Sandúr, dated 18th June 1881.

Size of block.

Judging from the ease and rapidity with which the final operations were carried out, I am of opinion that in rural districts such as this, and where the Enumerators are well acquainted with the population, 200 houses might often be managed by an active Enumerator. Of course where the population is scattered in small villages this fact must be taken into account in fixing the number of houses in a block.

Private Schedules.

Only two private schedules were issued. In a population such as that of Sandúr the issue of private schedules, to any considerable extent, could not with advantage be effected.

Demeanour of the people.

The demeanour of the people was on the whole excellent. In the preliminary operations only some passive obstruction was met with, through some persons refusing to stay to furnish the information required, and going off to their ordinary work. Before the final census, however, the motives of the Government in instituting it were generally well understood, though a very few of the most ignorant appear to have expressed their belief that the Government intended hereafter to impose a tax with the view of recouping themselves for famine expenditure.

Accuracy of the results.

There can, I think, be no doubt that the care and efforts expended on the taking of this census have secured as accurate results as are practically attainable.

Chingleput District.

Extract from a Report by J. F. PRICE, Esq., Collector of the Chingleput District, dated 10th September 1881.

Suggestions for the future.

I do not think that there was much that one could find fault with in the general scheme. There are, however, one or two points in regard to which improvement might be effected. It was found, when we were at work, that numbers were in several cases obliterated. This was done, sometimes by mischievous lads and children, sometimes by careless house holders, but once or twice the owners of houses wilfully obliterated the numbers; and one man wrote and asked me what I meant by putting a number upon his property, stated that he had removed it, and cautioned me not to renew it. A case or two was tried by the Magistracy, the charge being "obstructing a public servant in the execution of his duty." I referred the convictions to the High Court as contrary to law, and they were quashed. I consider that the Census Act should provide that every officer in chief charge of the census of a district may, by such person as he may depute, affix a census number to any house for census purposes, that the owner or chief occupier of such house shall be bound, under a penalty, to maintain and preserve such number until such time as it shall be proclaimed in the District Gazette that this is no longer necessary, and that removing or damaging a census number or preventing the affixing in any way of one shall, in the one case, be held to be "mischief," and in the other "obstructing a public servant in the execution of his duty." I think that there might be a briefer interval between the preliminary and final census; there would be fewer corrections and additions. December or January would, in most districts, be a suitable month, as the rains would be over. I think that the plan which I proposed in regard to travellers, but which was not carried out, would ensure greater accuracy. I do not think that it would cost much extra. I could have done it at no great outlay. I consider that the schedules should be ready for distribution at an earlier date than they were upon the last occasion. Subordinates blundered and found that they had made mistakes in calculating their requirements, and the consequence was at the end that there was bustle and hurry when there ought not to have been. All the schedules should be machine-ruled. I managed to rule mine by means of a very simple affair which I had made up in the district and which secured uniformity. I think that twelve lines to a page would have been better than the ten which we had. File slips of bamboo were used for the schedules, thus forming them into books, which could be easily handled, and this lessened the chance of their being torn or dirtied in handling. I consider that, in view to future operations, every district should, at least a year before a census takes place, be mapped out down to Enumerators' blocks. There are very few changes in a district, and having all the blocks marked out before hand would save time and trouble when the next census takes place.

Size of block.

I have no suggestions to make regarding the proper size of blocks at a future census. No hard-and-fast rule can be laid down for this; and the point should be left to the discretion of the local officers who, in my opinion, are the best judges on the subject. What would be an easy number of houses to deal with in one place would be quite the reverse in another; population per house, the size of the compounds, the way in which a particular village or town is laid out, and many other matters have to be considered in forming an Enumerator's block.

Use of the term "house."

The method of numbering houses has been already explained. The term "house" was taken to convey what is laid down in paragraph 3 of the instructions issued and Proceedings of the Board of Revenue, No. 1290, dated 7th September 1880.

Private Schedules.

The number of private schedules issued was a little over 600. I am most decidedly against their use. My reason for this is the gross blundering which, even in the face of the clearest instructions, occurs in filling them up, and the consequent loss of time and trouble in making corrections. I may instance, in example of this, the case of Government House at Guindy, where private schedules were given. The schedules were full of blunders, had to be returned twice, and were then wrong; and I had finally to correct them myself. If with educated gentlemen to deal with one has mistakes, it seems to me that there is a very much greater chance of a muddle where indifferently educated Europeans and Natives, anxious to ventilate their small knowledge of the English language, are concerned. I consider it far better to refrain, until the country is more

advanced than it is, from issuing private schedules. Doing so, as far as I know, serves no useful object, and is certainly a source of considerable trouble and annoyance to census officers.

Agency.

By the term "unpaid agency" is, I presume, meant the agency of public servants. I am entirely in favor of this, and most strongly opposed to the employment of the non-official element, my ground being that there is a hold over the former class, as they know that they can be reached for any carelessness or blundering after the census is over; whilst the latter are paid their money, it is of no consequence to them whether they do bad work or not; and, unless anything wrong is detected before the census is over, there are no means of punishing them.

There was no difficulty in obtaining volunteer non-official Enumerators. They can always be had to a considerable extent from amongst the relatives of village officers and the "Umédvárs" of a district.

I was surprised at the intelligence displayed upon the whole by the subordinates engaged in the actual census work. There were, of course, dullards and blunderers of the most provoking kind, but the great majority of the men employed performed the tasks allotted to them with astonishing accuracy and care, and though their outturn was subjected to severe examination, very few serious mistakes were detected. There were, of course, errors as regards age, profession, &c., but, from what I have read of census returns at home, I should say that ours were on the whole better and more reliable than those obtained in England. As for the trustworthiness of the men employed they would, I dare say, not have been worth much had they had their instructions given them and been allowed to do their work as they best could. They were, however, unceasingly looked after, and natives, if this is done, and they know that they will, without fail, get into trouble if they are inattentive, become exceedingly careful and precise. I may be wrong in my estimate of the accuracy of the work done, but I saw a good deal myself. I know that the superior officers of the district did the same, and I am in hopes that the results will show my opinion to have been correct.

Demeanour of the people.

As a very general rule indeed the people were by no means obstructive; suspicious they certainly were to some extent, for they have not forgotten the protestations of Government in 1871 and the actual working introduction of the Local Fund Act with its land-cess, house-rate and tolls about the time that the census was over. Say what we could, and every care to explain what the object of the census was was taken, the people, though they acquiesced in it all, had evidently a lurking idea that we are not telling the truth. I had more than once the story of the taxes, imposed after the last census, brought up as an instance of the extent to which Government might be believed. There were, as might be expected in a district like this, sundry mischief-making malcontents who, at the beginning of operations, started the usual Indian Bazaar "Canards;" but none of these obtained any hold upon the public mind. As far as my recollection serves me, the people of Salem were in 1871 a good deal more suspicious and obstructive than those of this district were at the last census. It may be that the latter are more enlightened.

Opinion as to the general accuracy of the results.

I have already expressed my opinion upon this subject. This is based upon actual examination and check by myself and the other superior officers of the district of the numbering, names of chief occupants and individuals residing in houses, as shown in the written returns made.

North Arcot District.

Extract from a Report by W. S. WHITESIDE, Esq., Collector of North Arcot, dated 1st July 1881.

Difficulties met with.

No difficulty was experienced in taking either the preliminary or final census. The majority of the people having been distinctly informed of the unpleasant consequences of their refusal to comply with the requisitions of the census officers readily furnished all the information required by the Supervisors and Enumerators. Further, the wide publicity of the notice requiring each householder to leave an adult male member in his house to furnish the necessary information to the Enumerator on the morning of the day of the final census was attended with very good results, and greatly avoided the difficulties which the census officers would, but for it, have experienced in carrying out their work during the final census.

Suggestions for the future.

I could find no fault in the general scheme of the late census. As regards, however, the enumeration at final census of the guests and strangers who happened to have slept on the night of the 17th February 1881 in a certain house, the rule which directs that they should be enumerated the following morning requires modification. Owing to his ignorance or disinterestedness a house-owner may only be able to give the names of his guests, but not the other particulars required to fill up the schedule, and, consequently, either false entries will be made by the Enumerators in the schedules, or the entries omitted altogether. To obviate this difficulty I would suggest that some measures be adopted in future census operations to enumerate the guests and strangers on the night previous to, or before they leave the houses on the morning of, the day of the final census.

Size of block.

I have no suggestions to make as to the proper size of blocks in a future census. The size of each block must depend upon the local circumstances of the country, both in regard to the distances between villages and to the population to be enumerated.

Form of Schedule.

The present form and size of the schedules and Enumerators' books call for no remarks.

"House."

The term "house" was taken to mean "the dwelling-place of one or or more families with their servants having a separate principal entrance from the public way." Where several premises are situated within one compound, each premise having a separate entrance was treated as a house.

Private Schedules.

Only about 350 private schedules were issued, owing to there being only a limited number of English-knowing persons in towns.

Agency.

The employment of unpaid agency, which is chiefly composed of Government officials, such as Government village officers, Taluk Gumastahs, Huzur Clerks, and village officials in the Zemindari tracts is, in my opinion, advantageous. These officials are all men of average intelligence, and, having been trained in their respective departments, are able to perform the work independently and can be trusted and held responsible for any neglect of duty, inasmuch as they are public servants over whom we have control. These men will no doubt attend, as they have now done, to the duties entrusted to them with care, knowing that they may be found fault with and punished by the higher authorities. These remarks, however, do not apply to men specially paid and temporarily entertained for the census work. They are generally men of no experience, and have no proper training in any department. They cannot be expected to be as attentive to their work as unpaid officials would be. From a financial point of view the employment of unpaid agency is also decidedly advantageous to Government. As a sufficient number of village servants and other Government and Zemindari officials were available for employment on census duty, only a very limited number of non-officials were employed as Enumerators, and no difficulty was experienced in procuring their services. The agency employed was generally trustworthy, and they discharged their work with intelligence and in a satisfactory manner.

Demeanour of the people.

The demeanour of people was generally suspicious, but no obstruction of any kind was offered.

The object of the census was fully and clearly explained to the people in all parts of the district on several occasions by the Superintendents and Supervisors, and occasionally by the divisional officers; nevertheless it was not rightly understood by the common public, who generally seemed to think that the census was forerunner of fresh taxation.

Opinion as to the accuracy of the results.

The result of the Census can safely be said to be accurate throughout the district and among all races of people, inasmuch as there was efficient check and thorough supervision over the work of enumeration both in the preliminary and final census, and the entries in the Enumerators, schedules were tested and found correct.

South Arcot District.

Extract from a Report by A. CRUICKSHANK, Esq., Collector of South Arcot, dated 17th August 1881.

Difficulties met with in different cases.

Some Tahsildars complain that there was difficulty in carrying out the instructions given, as they were numerous, and the time that was available for communicating and carrying them out was very short; on the whole there were no difficulties of any importance which had to be overcome.

Faults in the general scheme and suggestions for future operations.

With respect to the interval between the close of the preliminary enumeration and the final enumeration day, the Deputy Collector on General Duties remarks that "it was too long, as many serious changes in the inmates of houses took place in the interval, and the labor of the preliminary enumeration to a great extent became nugatory, and thinks that a month's interval would be quite sufficient, as it would secure more fully the benefit of the labor expended on the preliminary enumeration." The Assistant Collector in charge of the Cuddalore Taluk also writes to the same effect, and says that "the interval between the preliminary and final enumeration was much longer than necessary with no good ends gained thereby." I agree with them. The time selected for the preliminary and the final enumerations were also very unsuitable for this district, as it was fixed at seasons when the village officers are busy at collection work and in getting the Jummabundi accounts ready. The preliminary enumeration had also to be performed at the time of the rains. The rules laid down for the guidance of those employed in census work ought not to be altered nor modified on so short notice as they were sometimes on this occasion.

Size of block.

The experience of the past census has shown that for the final enumeration 80 houses are the utmost that can be conveniently assigned to an Enumerator, and that the area of a block should not exceed one square mile.

Form of Schedule.

The Vice-President, Cuddalore Municipality, remarks that the form and size of the schedules used answered well enough, and suggests separate columns being provided for males and females, as it would facilitate the numbering of each sex and prevent the mistakes very frequently made in totalling and in filling up the slips attached to each book of schedules. In all other respects the form answered very well.

House."

The term "house" was taken to signify a building or hut in which people usually lived and took their meals. Stables, cattle-sheds, pagodas, schools, bazaars, &c., in which no body lived and took his meals, were not treated as houses. The instructions contained in the Board's Proceedings, dated 5th November 1880, No. 1681, on the subject were duly communicated to all census officials. A house with two entrances and in which two families lived was numbered as two houses in Tindivanam.

The work performed by Enumerators was tested by Supervisors and Superintendents and also by Divisional Officers. The mistakes found in the schedules were corrected in the presence of the parties answerable for them. The institution of fortnightly reports of progress of census arrangements was very beneficial in making the Tahsildars and others move about in their divisions and examine a large proportion of the schedules filled in by Enumerators and correct the mistakes found therein.

Schedules were issued to private individuals for the purpose of being filled up by themselves—(1) for preliminary enumeration under Rule 1 of the Instructions, and (2) for final enumeration under Section 10 of the Census Act No. XIV of 1880. The number of private schedules issued for either purpose was very insignificant, only 450.

Private Schedules.

The Vice-President, Cuddalore Municipality, in which the largest number was used, remarks as follows as to the extension of their use :—

"The schedules given to house owners to be filled up by them were few, only some of the European gentry having taken the trouble to prepare their own schedules. I am not prepared to advocate its extension, for it is only a limited few among the natives who appreciate the importance of a census and who may safely be trusted for accuracy in results." Only a few persons in towns took the trouble to fill up their own schedules. These had to be examined by the Enumerators, and the result was that mistakes were found in many of them, the correction of these taking up time and necessitating further inquiry. The work of the Enumerators cannot, therefore, be said to have been materially lightened. The filling up of the columns requires a careful study and mastering of the instructions given, and it is but a very few that are able or care to do so. I therefore concur with the Vice-President and deprecate the extension of filling up schedules by private individuals.

At the last census schedules filled up at the preliminary enumeration were ordered to be left at the houses of private individuals for the purpose of being revised by them on the final enumeration day, and the Enumerators were to go round again and collect them back. This procedure is open to objection, as it renders it possible for some of the schedules not being collected at all, owing either to the forgetfulness of the Enumerator, or to the forms themselves being lost through the carelessness of the householder. In the latter case the record of preliminary enumeration of such houses becomes unavailable.

I presume that the expression "unpaid agency" is intended to include (1) Government officials and (2) private individuals undertaking to serve gratis. The employment of the latter agency is certainly not advantageous, as much reliance cannot be placed on the accuracy of the information recorded by it. The experience of the last census has shown that it is very difficult or almost impracticable to get any private individuals to take up census work gratis. Of the 4,315 persons employed for the last census, only 10 * persons were non-officials who had offered their services gratis. If the period fixed for preliminary enumeration had not been cultivation time a larger number might have come forward, but there seems to be a reluctance to take up the work, as it involves a considerable sacrifice of time and even of money, as those that undertake it may have to go to the taluk frequently either to receive instructions or to clear doubts arising from time to time, or to take supplies of schedules and stay there some time.

Agency.

* 2 Supervisors.
8 Enumerators.

There is thus no alternative but to employ Government officials on the work, and there is no doubt that it is most advantageous to employ them; but as the taluk and village officials have for the most part to be employed on this work, it is absolutely necessary that the census should take place at a time when they can attend to census work with least detriment to their ordinary duties. Census work is made a plea for all omissions of regular work when they are called on to explain why the regular work was not attended to.

The general intelligence of the agency employed is reported to have been equal to the task in most places, and where the Enumerators had doubts they sought the aid of their relations and friends, and the Supervisors also carefully examined and revised what they had done. As to the trustworthiness of the agency, all the Superintendents report favorably.

Demeanour of the people.

The Vice-President of the Cuddalore Municipality writes as follows regarding this :—

"Complaisant, but rather backward in furnishing the different particulars for filling in the schedules, and this was chiefly among the most illiterate of them, who were apprehensive of a poll-tax following—an impression which it was very difficult to get some to cast off, in spite of all the explanation that the sole aim of the census was to ascertain the population of the town and nothing more." The people were on the whole unobstructive, though in some parts an impression seems to have existed in their minds that a new tax would be the outcome of the census Wherever such impression existed the Tahsildars concerned explained the proper object of census to the people and in a great measure satisfied them.

It is impossible to answer this question as there are no means of testing the accuracy of the results by a comparison with any other accounts on record. No pains were, however, spared to obtain accurate results, as you will have seen from the progress reports already sent, and, on the whole, the results obtained are believed to be more accurate and satisfactory than those of 1871. If the schedules of each district had been tabulated under the supervision of the district authorities, I might have been in a position to answer this question. There was only one complaint impeaching the accuracy of the census in the village of Konalur, Villupuram Taluk, but this complaint was groundless.

Opinion as to the general accuracy of the results.

TANJORE DISTRICT.

Extract from a Report by C. A. BIRD, Esq., Acting Collector of Tanjore, dated 12th September 1881.

One hundred houses may be allotted to each block as at present in any future census. The form and size of the schedules issued were well suited for the purpose. The schedules were stitched up into convenient sized books.

Size of block and form of Schedule.

"House." The term "house" was understood to mean the ordinary dwelling-house of one or more families with their servants having a separate principal entrance from the public way.

Private Schedules. Supervisors, Superintendents, and Divisional Officers visited villages and estedtentries in the schedules and house registers. The result appears to have been satisfactory. About 500 private schedules were issued. Their use could be much extended if this should be considered desirable in future.

Agency. The employment of unpaid official agency was indeed advantageous, because these men being Government servants did the work entrusted to them with the greatest possible accuracy for fear of punishment. No difficulty was found in procuring voluntary non-official Enumerators.

Employment of the official unpaid agency to the extent available is most desirable for future operations. The agency employed was intelligent and trustworthy.

The demeanour of the people. People willingly gave the information required, and even if a few illiterate persons suspected additional taxation, the objects of census were fully explained and generally understood.

Opinion as to the general accuracy of the results. The result on the whole I believe to be pretty accurate.

Trichinopoly District

Extract from a Report by H. SEWELL, Esq., Collector of Trichinopoly, dated 7th June 1881.

Suggestions for the future. For future occasions it would be more satisfactory if instructions to Enumerators were clearly and concisely drawn up once for all instead of being altered from time to time. The frequent revised instructions as to filling up column 10 (Occupation) especially, with reference to agriculturists, issued by the Census Commissioner and by yourself while on tour of inspection or in reply to references, served only to puzzle the Supervisors and Enumerators.

I would suggest, also, that in future regard be had to the various references made now from different districts, and the instructions so framed as to reduce the possibility of references on doubtful points to a minimum.

Private Schedules. Two thousand copies of the instructions to householders for filling up their schedules were received from Madras and distributed among the Superintendents according to their estimated requirements. No account appears to have been kept of the number of private schedules actually issued except in one charge. I do not think, however, that they were largely used. With a provision in the law making it incumbent on such householders as may be furnished with forms for the purpose to fill them up under pain of some penalty the system might well be extended; only the instructions must be clearer and given in the Vernacular as well as English.

Form of Schedule. I have little to say about the form or size of the schedules. I think, however, that they should be printed with horizontal lines, so as to ensure a uniform number of entries being made in each. The greater portion of the supply for this census were not so ruled, and the result was that the Enumerators ruled them narrowly or otherwise as it pleased them, although orders were issued on the subject.

Size of Enumerators' books. The Enumerators' books should not contain more than 50 schedules, as otherwise they become inconveniently bulky and are likely to tear from their own weight. Some uniform plan of binding them should be prescribed and all forms to be filled and attached to them should be issued at one time.

Siz of block. The time allowed for preliminary enumeration was 15 days, and but for the corrections that had to be made in column 10 of the schedules, in consequence of the revised instructions, no Enumerator could, in my opinion, have had work for 4 days at the outside. If therefore so much as 15 days is to be allowed for preliminary enumeration at a future census, the number of houses in a block might be raised and the staff of preliminary Enumerators might be reduced. Each village might be left to its village officers (except where there are more than 500 houses), who can easily complete the work in time. For the final census additional Enumerators would have to be appointed, so that each may not have more than 100 houses to do, which I consider to be a proper and reasonable number. The advantage of this proposal is that the additional Enumerators will be drawn away from their ordinary occupations for a few days only, not for any length of time, as was the case at this census.

"House." The use of the term "house," as defined by the Government of India with the modification as to houses divided by partition walls (*vide* Board's Proceedings, No. 1628, dated 28th October 1880), calls for no remark.

Agency. The agency employed consisted for the most part of officials, non-officials forming but a ninth of the whole lot; and an extremely small proportion of these last had to be remunerated.

There was not much difficulty in procuring the services of these non-officials, although one of the Superintendents believes that there were among them some who were unwilling, but yet did the work under the impression that something might happen to them if they refused. I believe that the persons employed were generally intelligent and trustworthy. There may have been among the Village Munsifs some insufficiently educated who had to get through the work with the assistance of others.

Demeanour of the people. The people were in no way obstructive. At the commencement of the operations the more illiterate of the people had some misgivings as to the real object of the census. They construed it into an indirect plan on the part of Government to ascertain the number of inmates of every house with a view to imposing a poll-tax. The more detailed inquiry into their occupation, necessitated by the revised instructions, tended a little to

strengthen their suspicion. I have no doubt, however, that the explanation subsequently given them by the census officers nearly, if not entirely, divested them of the mistrust.

Opinion as to the general accuracy of the results.

As to the general accuracy of the census, the agency consisted mostly of intelligent officials who must have been alive to the consequences of any neglect on their part, seeing what importance was attached to the matter by Government and their superior officers. The system also of supervision tended to prevent carelessness on the part of Enumerators. Ten per cent. of their work was checked by the Supervisors who went round their circles and sometimes supervised the Enumerators while actually at work. The divisional officers also went on tours of inspection, examining the schedules at random of the villages they visited.

Madura District.

Extract from a Report by H. J. STOKES, Esq., Collector of Madura, dated 15th July 1881.

No difficulty was experienced in the district except the following.

Difficulties met with in different cases.

In the estates of Ramnad and Sivaganga the Head Assistant Collector reports that, owing to want of proper men for employment as Enumerators and Supervisors, some difficulty was experienced. The agency employed was unable to understand the instructions. Further, the zemindaries are of enormous size, consisting not only of Zemindari Ani villages, but also various cowle and inam villages. The difficulty was greater at the harvest time, as the services of the Zemindari officials were then required both for Zemindari and census work.

There was difficulty in censusing the travellers from the north who were generally pilgrims to Rámésvaram, and who were both unwilling to give particulars and unable to understand the language of the district; for instance, the Nepaulese party, who were at Rámésvaram on the census night, refused to give any particulars beyond the total number of males and females. But, however, the Head Assistant Collector succeeded in obtaining the necessary particulars on their return to Madura.

Faults in the general scheme.

Instructions were not received in time; when received they were frequently not final. Instructions subsequently came modifying the original ones when the work was actually being done, and when there was hardly any time to communicate to and make the Superintendents, Supervisors, and Enumerators understand.

It sometimes happened that the owner of a house was unable to give the particulars of a traveller that halted in his house in the census night, and that dumb persons cannot give any information respecting themselves. In both these rare cases difficulties have arisen.

Suggestions for the future.

Instructions should be distinct, final, and be issued once for all and in time.

Size of block.

I am of opinion that 100 houses if situated within a mile give a very fair amount of work to an Enumerator.

The form and size of the schedules and Enumerators' books.

It would be better if more space had been allowed at the top or on the right side of the schedules to facilitate their being stitched and the signatures of the Enumerators being affixed.

The use of the term "house."

The definition of a house given in the Board's Proceedings, No. 1290, dated 7th September 1880, was adopted; but there were many misapprehensions as to the real meaning and difficulties in bringing it to practical use. Under this definition the average number of persons for each house cannot, I think, be accurately found, as in a compound there are many houses.

Private schedules.

Four hundred and twelve private schedules have been issued. The reason for the smallness of this number seems to have been the late receipt of the notice and instructions about private schedules. They may be issued to any intelligent persons with instructions in the languages they know best.

Agency.

As regards the agency employed. In the district no Enumerator, Supervisor, or Superintendent was paid specially for doing the census work. In villages inhabited by Kallers, Maravers, and other ignorant classes, chiefly in Ramnad and Sivaganga, there were both advantages and disadvantages in employing village officers. These men were incapable of being taught. Even after repeated instructions and corrections mistakes of the most ordinary kind were committed, and the task of supervision was unusually severe, particularly as several village officials could not write even tolerably. There was, however, a great help from these ill-educated Nattamgars, as they knew the people and could easily detect mis-statements, and as people had confidence in anything in which the village headman took a leading part. If, however, proper assistants be given to do the writing work for such of the Nattamgars as are incompetent, the census work will be easier.

In large villages and towns, except the Municipal towns of Madura and Dindigul, the available agency was sufficient.

The difficulties found in procuring voluntary non-official Enumerators in Zemindari tracts were very great; practically none were available, but the *quasi*-official Zemindari servants.

Suggestion for the future.

Paid agency should be largely availed of if accuracy is aimed at. The agency employed has been trustworthy, though not sufficiently intelligent in all cases. In the Zemindaries of Ramnad and Sivaganga the village officers are exceptionally ignorant.

The people were under the impression that the census was the forerunner of further taxation, but this impression gradually wore way as the real object of census was explained to them. In Ramnad and Sivaganga Zemindaries chiefly the object of census was not properly understood, not even by the Enumerators. The more minute inquiries as to occupation in particular seemed to point to the introduction of a tax, such as the existing license-tax.

The demeanour of people.

I think that we have obtained a considerably greater degree of accuracy than in the previous census, and that there is no reason to believe that in any part of the district has there been any considerable omission.

Opinion as to the general accuracy of the results.

Tinnevelly District.

Extract from a Report by J. B. PENNINGTON, Esq., Collector of Tinnevelly, dated 20th May 1881.

In my opinion an unnecessary length of time was allowed to intervene between the preliminary and final enumeration. The shorter the intervening period the better. I think six weeks enough and two months ample. The preliminary enumeration may well be commenced on the 1st of January or the 15th of the previous month. At the same time it must be admitted that under the present system great opportunity is afforded for correcting mistakes, and the supervision is probably more efficient than it would be if less time were allowed. The numbering of the houses might also be commenced a month later.

Faults in the system and suggestions.

The number of houses to be assigned for a block should be determined chiefly with reference to its area, *i.e.*, the distance the Enumerator will have to travel; and no Enumerator should have more than 10 hours' work on the final census day. In a town or big village, where the houses are close to each other, 7 minutes may on an average be allowed for an Enumerator for taking the final census of the residents of each house. In those parts of the town and in small villages where the houses are detached 10 minutes may on an average be allowed for censusing the population of each house. I would therefore propose that a block should consist of not more than 60 occupied houses in villages and those parts of the town where the houses are detached, and not more than 80 occupied houses in other places, and that, when necessary, two blocks be entrusted to the preliminary Enumerator, who is generally the Village Curnam or Munsif, or other public servant, who can devote sufficient time to the work for a couple of weeks or so without prejudice to his ordinary official duties.

Size of block and suggestions for the future census.

The preliminary work having thus been done leisurely, additional Enumerators may be appointed for the final census, one for each block, for 3 or 4 days. It will not be difficult to secure the services of unpaid agency for such a short time. There may be competent relatives of the village officers themselves or other residents of the village who would be willing enough to undertake the task, as it would not take much time. An Enumerator appointed in the late census had to devote his time to the work for more than three months from 15th November 1880 to 19th February 1881, and though he had now and then a few days at his disposal in the interval, yet he had often to wait on the Supervisors, Superintendents, and Divisional Officers who visited the village and checked his schedules. It can hardly be expected of a private individual, not probably in good circumstances, to afford so much time purely for the benefit of the public. It would be out of the question to employ paid agency throughout; but the arrangement suggested by me would obviate the difficulties or, at any rate, reduce them to a minimum. After the close of the first enumeration special Enumerators required should be appointed, and thoroughly instructed by the Supervisors, a couple of days before the final census. This would necessitate the publication of all the important rules and orders connected with the census, so that they may learn them in a few hours. The Supervisor might ascertain by examination how far the special employes are familiar with the rules. As they would generally be men acquainted with the people of the place, and would also have some idea of the details of the preliminary enumeration, the probability of mistakes would not, I think, be much greater than under the present system.

Ten years hence, when the next census may be taken, the progress of education will have considerably reduced the difficulty now experienced in getting qualified persons if their services are required merely for a few days. Under the arrangement proposed the preliminary Enumerator would sign the schedule at the top with the designation of his office before, and the other would sign it at the bottom after, the final census, and the names of both might be reported to the Central Office.

The example of Tiruchendur affords a proof of the ease with which we could get private individuals to work as Enumerators if it were only for a day or two. We required no less than 25 (exclusive of Police Constables) special Enumerators to count the pilgrims in the town, and the buyers and sellers in the cattle market. All these were secured by the Tahsildar at 48 hours' notice. None of them showed the least sign of disinclination to do the work without any remuneration.

Their presence was required on the 16th when they were instructed in the rules; on the 17th their respective blocks or portions of block were shown to them, and they were made to go round their blocks again. As they were all residents of the town, they experienced no difficulty whatever in obtaining the required information, even from the pilgrims who had halted in the chattram, and the census was taken very quietly.

The Supervisors, however, should invariably be paid public servants, and the Zemindari Peshkars, Stemadipathies, and other irresponsible servants of Zemindars, or any other private individual, should never be appointed as Supervisors.

The frequent modification of orders regarding "occupation" caused some confusion this year, and I do not suppose the occupations have been entered correctly in many cases.

"House."

The latest definition of the word "house" was very likely to affect many house registers prepared in this district. The definition is not at all suitable for this district, as there

are several distinct houses having separate entrances and inhabited and owned by distinct families, but having a common entrance from the public street In such cases each of these separate homesteads was treated as a separate house; and as it would have caused infinite confusion and very incorrect results to make any alteration when the new definition was received, the registers already prepared were left as they were. It is not unlikely, however, that some of the schedules may have been filled up in accordance with the revised instructions, so that there will be a want of certainty as to the results of the census as far as the numbers living in a house are concerned. It would be much better not to define the word "house" at all; but if a definition is thought necessary, the following will suit this district: "A house is any building used or which may be used as a dwelling-place of the members of one or more families having a common entrance leading to a public or private street, or a common yard, or enclosed ground."

Private Schedule.

No account was kept of the number of private schedules issued and filled up by the owners themselves. If forms are circulated with clear and detailed instructions, I think the system might well be extended with advantage and without fear of any great inaccuracy. A very large number of the intelligent and educated men will prefer filling up the schedules themselves instead of submitting themselves to the vexatious queries of the Enumerators. Any mistakes made by them on important matters may be easily corrected by the Enumerator and Supervisor. It would be better, however, if there was a provision in the law that these private schedules should be filled up in 48 hours.

Agency.

Advantages or otherwise of unpaid agency.

There can be no doubt of the advantages of engaging for the census work those paid employés from whom strict obedience to orders may be expected. The remuneration is certainly a strong incentive to many to take a greater interest in the work. But the advantages are not so great as to outweigh financial considerations. The ordinary establishment in all the departments should be utilized to the fullest possible extent for the preliminary enumeration and supplemented for the final census by unpaid agency as far as possible. If the plan proposed by me is adopted, the difficulty in procuring voluntary non-official Enumerators for the final enumeration only will be very much reduced as regards Government villages. But the general ignorance of the village Nattamaigars and of the ryots of the zemindaries necessitates a specially paid agency for those tracts. In Tenkási it was found necessary to employ a large number of paid men (113) for taking the census in the zemindaries of that taluk.

Demeanour of the people.

My own opinion is that the people are perfectly indifferent. The delusion of the census being a prelude to a poll-tax or any other tax has almost entirely disappeared. The mass of the population think that it is the whim of the Circar, as the Head Assistant Collector says. Very few, however, even amongst the educated understand the real object of the census. Hence there is a general apathy. One story I heard myself in Etaiyapuram may be just mentioned. It was that Government wished to find out how many men there were aged 30 who would be fit for the Afghan war; and it is said that in some villages there was a general desire amongst the able-bodied males to enter themselves as well over 30. Probably, the best plan would be to instruct all the children in the pyal schools as to the meaning of a census.

Difficulties met with and opinions as to the general accuracy of the results of the census.

The results are in my opinion generally as accurate as could be expected. In the town of Srivaikunthum there is a peculiar class of Vellalas who are called Kotai Vellalas. They live in a fort surrounded by a thick mud wall, and no men of other castes are ever allowed to enter it. They are noted for their peculiar custom of keeping their women in complete seclusion, and will not allow their features to be seen even after death. These people were censused by men of their own caste who reside in the fort. The entries were checked by two women of the Christian Mission and found to be correct. The services of Mahomedan officials were secured in ascertaining the accuracy of the census of the Mahomedan population in the Tinnevelly Municipality. Mahomedan Enumerators were employed in taking the census of the Mahomedan population in other towns and villages which are densely populated by that class. The village officers who were generally acquainted with the members of the several families checked the Enumerator's reports. It cannot of course be presumed that the final census was carried out without a mistake. For instance, no schedule was given to the Reverend A. Margoschis at the final census. The enumerator asked his servants for necessary information and returned quite satisfied. It has been ascertained since that the schedules were correctly prepared. So in Virudupati the Enumerator never took the trouble of asking Mr. Bruce Foote, of the Geological Survey, who was in the travellers' bungalow there on the night of the 17th February and stayed there on the 18th; but I sent for the schedules and had it verified afterwards. It was discovered at Tiruchendur that a matam was left unnumbered and the inmate uncounted on the final census day, but the mistake was detected in time. On the whole, however, I have no doubt the Divisional Officers and Tahsildars are right in saying that the result is generally accurate, and that more accurate results can hardly be expected. The final census of travellers, &c., was completed in one night, and that of the resident population generally in one day. In a few places, however, where the Enumerator's blocks consisted of more than 100 houses, the Temporary Deputy Collector says they could not complete the final census till the morning following the day fixed. The Head Assistant Collector says that in several blocks the Enumerators had to work very late in the night of the final census day in consequence of the blocks being large. In the Nanguneri Taluk the population of the coffee estates, which are detached and for which special arrangements were made, was taken on the 18th and 19th.

Salem District.

Extract from a Report by H. E. STOKES, Esq., Acting Collector of Salem, dated 19th July 1881.

Difficulties.

No difficulties of any importance have been reported. One Superintendent notes inconvenience owing to absence of adult male members of the family in 38 houses; and in a few cases the scruples of Brahmin Enumerators and Pariahs as regards entrance and admittance into the houses of the latter had to be got over.

Defects of system and suggestions.

The general opinion is that the system needs no improvement. Several Superintendents complain of the difficulty of getting work out of volunteer Enumerators, who found that they had to do much more than they anticipated when they consented. I consider that in future censuses the additional expense involved in paying, say, Rs. 10 per man, would be worth incurring. In many places good service could be got for less. One Superintendent suggests the employment of female Enumerators where there are many gosha women. Another that the practice of making first rough entries in books and then fair copying them on printed schedules should be obligatory, and that 15 names should be written in the schedule instead of 10. Forms such as used in the present census could easily carry 15 names, and 10 is a number which in a great many cases requires the use of a second form for a house. The only other suggestion worth notice is that the period between the preliminary and final census should be shortened. In this I fully agree. The interval on the present occasion was far too long, and the final enumeration might easily have been made a month earlier, and on the middle of January, even allowing for the prolongation of the preliminary census resulting from the issue of new instructions as to house numbering and entry of occupation. But for this 15 days would have been amply sufficient for it. Two months from the commencement of the preliminary to the final numbering should, in my opinion, suffice. The shorter the time (consistent with check) the better of course.

Size of block, &c.

The average area of a block (excluding the tracts exceptionally censused) is 2·06 square miles; but the average is unduly swollen by the inclusion of large tracts of scarcely inhabited country in the Hosúr Forest Circle, and in Harúr and Pennagaram. In the ordinary plain country the average area is about 1½ square miles; but where the population is collected in villages the area comprised in the block is misleading. The number of houses in the block is a better criterion. It will be seen that in every charge the limit of 100 houses had to be exceeded, owing to local circumstances and difficulty of getting men; but the cases were restricted as much as possible. Several Superintendents suggest that the block should not exceed 70 or 80 houses. The matter is important only with reference to the final enumeration, and I think that, in towns and large villages, and supposing only a short interval between the preliminary and final census, an average Enumerator, who had already filled in the schedules, should be able to manage 150 houses with ease. I would make this number the maximum and fix 80 houses as the normal. But an absolute limit cannot well be laid down. The average number of houses in a block was 98·65. The high number (472) shown in the statement against Shevaroy Hills, which were not under exceptional census, refers to the Malaiali houses. The final census of these people had to be prolonged over a second day. The remaining high numbers were all in towns or in manageable areas.

Form of Schedule.

The form and size of the schedules is generally considered suitable. One Superintendent suggests that column 10 (Occupation) should be wider, and I think he is right. The point, however, might not have attracted attention but for the large number of corrections required owing to the late instructions for filling up this column. An additional column to show relationship among families is also suggested.

The use of the term "house."

There was great vagueness on this subject, which was intensified by successive definitions; any attempt to discriminate between house as a separate building and enclosures by laying down distinctions with reference to family occupancy and the like must, in my opinion, always fail. A satisfactory definition, which will be of general application, is impossible.

Private schedules.

These were very few, not more than 300 in all. The exact numbers are not given in all circles. One hundred and forty were issued on the Shevaroys and a few in Salem, Tirupatúr and Hosúr. I ordered the issue to be restricted to those whose mother-tongue was English; the instruction to issue them to all persons understanding English arrived only one or two days before the final census. The opinions expressed by Superintendents are strongly against any extended use of private schedules, and in this I fully concur. Private persons will not study the instructions which are very complicated and voluminous, and mistakes will result if they are called upon to fill up the schedules. The use of private schedules saves scarcely any trouble to a practised Enumerator, and imports error and imperfection into the results. I filled up the schedule for my own house, and the work and study of the instructions took a couple of hours. I do not imagine that other householders would take as much trouble over it as I did; yet I believe I made some mistakes.

Unpaid agency.

Only two Superintendents report favorably of volunteer agency. All the rest agree that the only advantage is the saving in cost, and that good work can be counted on only from paid or official agents. Volunteers cannot be controlled and there are no means of punishing them. Supervisors should always be officials. In almost all charges considerable difficulty was found in procuring competent men to work without pay. Those got were usually relations or dependents of official Enumerators.

Character of agency.

Except in Krishnagiri and Pennagaram, whence disparaging report is made, all Superintendents of charges state that the agency employed was intelligent and trustworthy, but the men required a good deal of instruction in many cases. I believe the agency was on the whole very good. The exceptions were in the Mitta tracts and parts of Uttankarai, which are backward.

There were a few vague rumours as to imminence of house and poll taxes, but these fears were readily dispelled and information was given without any reluctance. In Atúr and Harúr a few Mahomedans objected at first but were easily persuaded. The fact is that there having been three censuses in the district within ten years, the people have become familiar with the idea.

Demeanour of the people.

There is no doubt that the census is generally accurate. No Superintendent thinks that there have been any omissions of persons, except perhaps a few Irulars in the forests. Some express a fear that travellers who had lost their tickets were counted twice over. These errors, if real, cannot affect the general accuracy of the work, which I believe to be very good. The information as to age is bad, and it is noted by several Superintendents that many of these entries are mere guess work. I have noticed great differences in this matter between the work of different Enumerators, and I think that if an Enumerator take the trouble to get it, a fully accurate record of age can be obtained. But the record, as actually obtained, is decidedly bad. There are no grounds to suspect differences in degree of accuracy of the census in different parts of the district.

General accuracy, &c.

Coimbatore District.

Extract from a Report by W. WILSON, Esq., Collector of Coimbatore, dated 26th May 1881.

No real difficulties were met with except in one or two cases where, through mere obstinacy, the names of inmates of the houses were at first refused. In these cases the obstinacy was overcome by kind persuasion and by a clear explanation of the object the Government had in view in taking a census.

Difficulties met with.

There was no remarkable absence of people from their homes at the time of the final census so as to prevent their being censused; but it is reported by the Karur Municipality that in cases where Hindu husbands were out, their wives would not and did not give their names, as it was contrary to the long-established custom among them. I am of opinion that this could not have presented any difficulty at all, inasmuch as the information required could have been obtained from any other male or female members of the household or from neighbours.

The following suggestions are offered for future censuses. Instructions as to the preparation of the schedules should not frequently be varied as in the present census. This had much to interfere with the efficiency and correctness in the preparation of the schedules.

Suggestions for the future.

Column 1, census schedule (consecutive number) should not be filled up till the final enumeration, as erasures have to be made in very many houses which throws the original consecutive numbers all out, *e.g.*, if in a house with six entries the third is absent at final enumeration, he has to be struck out; this alters the consecutive number of all those below him in the schedule.

It is also considered that instead of entering visitors and omitting absentees at the preliminary enumeration it would be better to enter at the preliminary enumeration all ordinary residents, whether then present or not. The present system involves an enormous number of corrections at the final census, for, as three months elapsed between the preliminary and final census, visitors and absentees had both returned to their own houses.

Blocks containing from 60 to 100 houses, according as they are more or less closely packed, are about as much as a single Enumerator can well manage at a final census.

Proper size of a block.

The term "house" was used in the sense defined in the Census Instructions.

"House."

After the preliminary enumeration the Enumerators' books were sent to the Supervisors and by them to the Superintendents. These Supervisors checked the entries in the schedule books at 10 per cent. In several cases they tested all the entries in the books. The Superintendents (Tahsildars) frequently visited several villages and personally instructed the Enumerators in their work and inspected it when done. The Supervisors also from time to time accompanied the Enumerators while taking the census, and explained to them clearly how to fill in the schedules.

The exact number of private schedules issued cannot be given, as an account of such schedules was not kept everywhere. Practically private schedules can be issued only to persons resident in the larger towns and villages; the rural population is quite uneducated. I see no reason for restricting the issue of them as in the late census to the "English-speaking" community. The extension of the system would materially relieve the Enumerators.

Use of private schedules.

The employment of unpaid agency is certainly advantageous from a financial point of view, which it is almost the only kind of agency that financial considerations will admit of for a census in India. It is for the most part official or *quasi*-official, and therefore more or less disciplined and subject to control; persons out of these classes will not generally give their aid as was found in the experience of this district during the recent census.

Agency.

All officials and non-officials employed in connection with the census were generally intelligent and trustworthy.

The chief sources from which the non-official Census Officers were drawn were private schoolmasters and their students, vakils, volunteers in the several departments, ryots and other persons.

The general demeanour of the people was calmly indifferent. Here and there to be sure misapprehensions as to the real object of the census were at first entertained, but these were removed on the object being clearly explained to them. They were told that the object of the census was nothing more than obtaining information as to caste, age, sex, &c., for statistical purposes.

The demeanour of the people.

Accuracy of the results.

The results of the census are believed to be on the whole accurate and satisfactory, as all possible precautions for ensuring correctness were taken. Even the Mahomedans, who, it was supposed, would hesitate to give the requisite particulars regarding their females, were made sensible of the object of the census, and those parts where these people were living were frequently inspected by the Tahsildars and Supervisors, and the entries in the schedules were found correct.

Nilgiri District.

Extract from a Report by N. A. ROUPELL, Esq., Acting Commissioner, Nilgiris, dated 20th October 1881.

Difficulties met with.

Constituted as this district is, a good deal of difficulty was experienced in effectually controlling the details of the census work owing to the want of a proper taluk establishment in a large portion of the district. A work of such importance and magnitude necessarily proved a great strain upon the energies of the few officials available. I am glad to be able to report that the work was on the whole satisfactorily done.

The towns of Ootacamund and Coonoor and a few of the largest villages were divided into blocks according to instructions, but in the greater portion of the district this arrangement was not found practicable, as the hamlets and isolated huts of villages are situated far apart from one another, with long stretches of jungle intervening. The character of the ground often rendered the passage from one village to another matter of some difficulty. To guard against any possible omission of isolated huts and residence of the hill tribes the house numbering was first taken in hand. During its progress due inquiry was made of the monegars, headmen, and villagers; then, with the house register for guidance, the blocks or Enumerators' ranges were formed. Special Enumerators were appointed at the final census for travellers on the important ghát roads and public bungalows. The preliminary enumeration of the inmates in large institutions, such as the Lawrence Asylum, and residents on coffee, &c., estates, were made by a paid and trained agency; for the final census notices were served on the owners or superintendents of such properties to correct the schedules. The work, however, was very indifferently done in the majority of cases, though clear instructions were printed and circulated. The minute distinctions of classes and religious denominations of the Hindus were not understood. The result was that, in the South-East Wynaad especially, the schedules had to be rewritten after further inquiries of the superintendents or owners of estates. The system of house numbering adopted by the Deputy Tahsildar of Gudalúr was faulty and against rules. On coffee estates the coolies lines were each marked with one number instead of each hut in the line bearing a separate number. This contributed much to the confusion. The mistake was, however, partially rectified before the final census. I am of opinion that the enumeration of the coolies and others on private estates and institutions by the people in charge thereof is advantageous and financially economical. It seems to me better to conduct the preliminary census by paid and specially instructed agency and to require the owners or superintendents of properties to take the final enumeration, for with the filled-up schedule for their guidance private individuals are less liable to commit mistakes at the final enumeration.

Suggestions for the future.

Size of block.

It will be understood from the special arrangements which had to be made, as described above, that the area of each Enumerator's block can hardly be stated. The hamlets visited lay three to seven miles apart. In towns and villages, where the houses were close together, the maximum number assigned to each enumerator ranged from 100 to 150. In the rural tracts the maximum number of houses each Enumerator had to visit varied from 50 to 150, according to distance to be travelled.

Agency.

Allusion has already been made in above to the disadvantages under which this district labors for such operations as those under reference. The Revenue establishment, out-door and in-door, is utterly inadequate for ordinary work. With the exception of the small establishments of the two Deputy Tahsildars at Coonoor and Gudalúr, there is no taluk agency. The village staff is inefficient and ignorant. Other public offices in this district are few and their establishment small. Even private individuals of sufficient experience and education are scarce. The greater portion of the native population is composed of illiterate workmen. The few well-to-do merchants and other intelligent men would not offer their services. Special Enumerators were secured only with much difficulty. They were hardly men of the right stamp, but they were the only men to be had.

In a hilly tract like this the assistance received from European planters during the progress of the census work, more especially at the final census, is very great. Estates lie far apart and the number of coolies employed on each amounts, not uncommonly, to several hundreds. I am therefore in favor of the final enumeration being left in the hands of the owners or superintendents.

Demeanour of the people.

Due notice was given of the census to be taken in the Gazette and local papers and by means of the village staff. No obstruction was met with in any quarter, but the hill tribes inhabiting the jungle, especially the Kurumbers and Irulars, were to a certain extent frightened by the presence of strangers, though accompanied by their own monegars or villagemen. This was not due to any suspicions or alarms specially connected with the census. These hillmen are accustomed to seclusion, their dwellings are rarely visited by strangers, and they look on every new visitor with apprehension. The census was completed with the assistance of a few people of their own tribes,

Opinion as to the general accuracy of the results.

My opinion is that they are very fairly accurate.

Malabar District.

Extract from a Report by G. McWATTERS, Esq., Acting Collector of Malabar, dated 12th September 1881.

Difficulties met with.

Considerable difficulty was experienced in procuring the services of a sufficient number of competent non-official unpaid Enumerators for the final enumeration, while for the preliminary, which, under the rules, was to have been completed within 15 days, the task was simply impossible. Hence the preliminary enumeration had to be conducted solely by means of the Amshom officials, and the work was necessarily prolonged beyond the prescribed period.

Faults in the general scheme and suggestions for future operations.

The scheme considered by itself is best adapted to secure a satisfactory result, and would have in its operation occasioned much less trouble and annoyance had the rules once framed been less often altered. One source of great trouble was that the Enumerators had to be summoned and instructed on each occasion that new rules were issued or new ones modified or cancelled.

The number of blocks, circles, &c.

The number of houses allotted to each block was generally from 10 to 60 according to the area comprised in each block. In exceptional cases, however, the number ranged from 3 to 199. This was the arrangement made for the final census. In fixing the number of houses for each block due regard was paid to the local area covered by them with the further precaution that the number so assigned was such as could be conveniently dealt with by one Enumerator in a single day. Where houses lie so scattered over the country as in Malabar, no given area or number of houses could be assigned. This will account for the striking difference in the figures 3 and 199 mentioned above. In the case of towns where the houses are studded together, the average area of each block may be fixed at 50 acres and the number of houses at 60.

The use of the term "house."

The term "house" was understood and acted upon in strict accordance with the definition given in the instructions.

The system of check and supervision

Prior to the preliminary enumeration a number of Enumerators were chosen from among the Amshom officials, or those appointed for the final enumeration. These men were made to take the enumeration of people living in five or six houses and belonging to different castes. Their schedules were then submitted to the Tahsildars who were directed to examine them carefully, to point out the mistakes and to explain them clearly to the Enumerators. The schedules were next submitted to the Divisional Officers for their scrutiny. When the preliminary enumeration was concluded, the schedules were sent up to the Supervisors who carefully tested the correctness of the number and entry in the schedules at the rate of not less than 10 per centum of the number. The schedules subsequently underwent a further scrutiny by Superintendents and Divisional Officers.

The number of private schedules issued.

The number of private schedules issued was very small, being only used by Europeans and a few English-knowing natives.

Agency.
Advantages or otherwise of employment of unpaid agency.
Difficulties, &c.

The employment of unpaid agency was advantageous in a pecuniary point of view. The advantage extended no further. Great difficulty was experienced in finding a sufficient number of competent non-official voluntary Enumerators, of whom few were found to be willing to come forward of their own accord and assist in a work in which they had no personal interest. Considering this state of things, I would propose, for the future, to employ *paid* agency if greater accuracy is required.

Their intelligence and trustworthiness.

The agency employed consisted for the most part of men of ordinary intelligence and fairly trustworthy.

The demeanour of the people.

On the whole the people were not obstructive. There were the usual wild rumours flying about as to the object of the census. An additional tax of some unknown kind was apprehended by some, and others feared forced emigration or sacrifices of life in the Wynaad gold mines. Only one case of obstruction in a Mussulman family within the Calicut Municipality was brought to notice, and this arose from the absence of male members at the time of the enumeration.

Opinion as to the general accuracy of the results.

Particular care appears to have been bestowed in the selection of men for the purpose, and as they were generally men of ordinary intelligence and ability, the results may be accepted as fairly accurate. In the case of hill tribes, too, where anything beyond approximation is impossible, every possible endeavour has been made to arrive at a correct figure.

South Canara District.

Extract from a Report by J. STURROCK, Esq., Acting Collector of South Canara, dated 28th October 1881.

Difficulties met with in different cases.

No difficulty appears to have been experienced in any case. There were two minor Jatras (festivals) in Kásaragód and Mangalore Taluks on the night of the 17th February, for which, however, no other special arrangements than the appointment of a few Special Police Enumerators were found necessary.

Faults in the general scheme and suggestions for the future.

Under Rule 5 of the Instructions for Enumerators the temporary residents of a house, such as visitors, &c., were entered in its schedule, while the permanent residents who were absent on journeys or temporarily residing elsewhere were omitted under Rule 6. By this arrangement many people had to be entered in the schedule of houses from which they were almost certain to be absent at the time of the final census, while many others whose names were omitted at the preliminary enumeration on account of their temporary absence had to be entered anew at the final enumeration. Moreover, some persons escaped the preliminary enumeration altogether, they having been absent in another village when the Enumerator visited their permanent residences, and having returned to their houses by the time the Enumerator of the other village got to the house in which they had been temporarily residing the preliminary enumeration not being the work of one day, but extending over about a fortnight. This course, therefore, involved much unnecessary labor at the preliminary enumeration, considerable difficulty during supervision and numerous corrections at the final enumeration, much of which would have been avoided if all the permanent residents of a house (though some of them should be absent for a time) were included in the preliminary enumeration, and all visitors excluded as was done in 1871.

Again in Rule 14 it was stated that the entry in column 7 of the Enumerator's schedule should, in the case of Hindus, be Brahmans, Rajputs, &c., and that if the name of the sub-division of the caste is entered the general name of the caste as a whole must also be entered. Applying the above rule to the case of Brahmans, it would seem that what is desired is the entry of the general appellation "Brahman," and that the special names of different classes of Brahmans are unnecessary, and if at all such special names are entered, the general name "Brahman" must be added. But such a rule is attended with difficulties; for, whenever there is any doubt as to whether any class of people claiming to be Brahmans are really such or not, the Enumerator has two courses open to him—either he should accept without question what the parties say—or he must try to ascertain the fact for himself. In the former case there is the risk of several classes falsely returning themselves as Brahmans, while in the latter case the classification would be virtually left to the Enumerators contrary to the general object of the rules, and if the designation of Brahman claimed by any class was not acknowledged by him, the feelings of that class would be hurt which ought to be prevented, as far as possible, in taking a census. Instances of this kind occurred in the late census. The Aksalis (or goldsmiths) residing in the town of Mangalore pretended that they were Brahmans, but the Enumerators showed them by their generally known name "Aksalis" and added the word "Shudra;" the latter word, viz., "Shudra," was however ordered to be scored out by the Municipal Vice-President whom they petitioned on the point as under the Resolution of the Government of India quoted in paragraph 4 the fourfold divisions of Menu were to be discarded. For the reasons given above it might be advantageous, in future, to adopt the course followed in 1871, viz., that of entering in the schedule the special name of each class of people without affixing the general name of the caste, such as Brahman, &c., and leaving the classification of the different classes under the proper head to be made in the Central Office by the aid of a classified list of castes to be sent from the district.

The words "you will score out the names" in Rule 21 might be altered into "you will score out the entries relating to them," or some such expression; for, if the former direction be taken literally (and by some it was actually so construed), only the entry of the name in column 2 will have to be scored out, and not the entries relating to it in the other columns, which is likely to give rise to some confusion at the time of tabulation.

In the instructions sent with their Proceedings, dated 27th May 1880, No. 731, the Board of Revenue directed that the numbering of houses should be commenced as soon as possible after the receipt of the said Proceedings, and that the house registers and the Statistical Returns No. 1 must be sent by the Curnams so as to reach the Tahsildar not later than the 1st September 1880. The heavy monsoon of this coast however does not permit of active out-door operations being carried on with ease between the latter part of May and the end of August, and the work, if required to be done during that period, is not likely to be well done. This circumstance may therefore be taken into consideration in fixing the dates of the several operations for future census.

Size of block.

In future it will be well to allot about 80 inhabited houses to an Enumerator in towns, &c., where the houses are close to one another; but where the houses are more or less scattered, no general rule can be laid down, though the number of houses in such cases may be limited to 70 and the maximum size of a block to one square mile.

Number of private schedules issued, &c.

It was only the householders who understood English that were required to correct the schedules of their houses at the final census, the preliminary enumeration having been made by the Enumerators themselves. In the Mangalore Municipality about 500 schedules are said to have been corrected or newly filled up by the householders, but in the other parts of the district where very few people are acquainted with English, the total number of such schedules did not exceed 100. It appears that, as a rule, these schedules were correctly prepared. As the number of English-knowing people is daily increasing, we may expect to be able to get a somewhat greater number of schedules filled up in English a decade hence. But their use would be greatly extended if the householders well acquainted with the vernacular were also required to fill up the schedules of their houses. There will be no great risk in the measure if the Enumerators are required to scrutinize the entries before adopting them. It may therefore be tried in a future preliminary census, and, if the result be satisfactory, the same course may be adopted at the final census.

Agency.

The success of the census depends in a great measure on the character of the men employed as Enumerators. Generally speaking there is no doubt that it is much easier to engage qualified Enumerators on payment of adequate remuneration than to secure the services of competent persons willing to do the work without remuneration. Responsibility can also be more strictly enforced in the case of paid Enumerators than in that of unpaid ones. The advantages of an adequately paid agency will not, however, be commensurate with its cost, which will be

so large as to prohibit its employment except in exceptional cases. There can be no harm in employing unpaid agency if the selection is made of men of good character and intelligence, and such a selection is not impracticable if the Tahsildars and Deputy Tahsildars only exert themselves in the matter, instead of entrusting the selection to Magani Shanbhogues, and Potails; for competent and trustworthy men are likely to undertake the work more readily when asked by the Tahsildar personally than by a Magani Shanbhogue, or Potail.

The Enumerators employed for the late census are reported to have been generally men of sufficient intelligence and to have done their work honestly. No instance of any abuse on the part of the Enumerators has come to light.

The demeanour of the people.

The educated classes did not apprehend any evil from the census, but in some places the ignorant mass seem to have entertained the notion that the census was the precursor of a poll-tax, and some people are even said to have suspected from the circumstance of the houses being numbered with red paint that the Government intended to force people into the army for the purpose of some war. But the Superintendents of Charges, &c., lost no opportunity of explaining the real objects of the census, and the generality of the people appear to have been easily satisfied when they were reminded of the census of 1871 which resulted in no harm to them. And though suspicion may have still lurked in the minds of a few, yet nowhere was any obstruction caused to the taking of the census.

Opinion as to the general accuracy of the results.

I joined the district after the census had been taken, but I am informed that Mr. Comyn took a great interest in it, and that all the Superintendents of Charges did their work well. The Superintendents of Charges state that the results of the census in their respective charges were generally as accurate as could be expected. The most intelligent and trustworthy agency available was employed in the Municipality of Mangalore during the final census, and the results of the census there must, therefore, be much more accurate than in the taluks. Neither Mahomedans nor any other people appear to have been averse to give the required information about males or females.

Madras City.

Extract from a Memorandum on the Census of the Madras City by A. T. ARUNDEL, Esq., President of the Municipality, dated 14th June 1881.

The chief preliminary difficulties of the census now finished lay in the fact that there was no record showing the detailed arrangements that were made for the Census of 1871.

Difficulties met with.

No serious difficulty was experienced in conducting the census. A few Mahomedans refused to give information until the consequences were explained to them. The Chepauk Agent had, at my request, obligingly written to all the chief Mahomedan families in Madras (Prince of Arcot, &c.), and had arranged to have a proper officer in each household to fill in the schedules. The good example thus given had an excellent effect among the Mahomedan community generally. The fishermen and boatmen caused a little trouble, as it was difficult to get information in the absence of the men who were at home only on Sundays. Amongst the European community no difficulty was met with, though there was some delay before the Club returns could be procured.

The preliminary census of regiments, clubs, hotels, &c., was conducted by the authorities or persons in charge. In every case, without exception, the schedules thus prepared had to be returned for revision and correction. This was partly due to the misleading character of the instructions on the schedules as to religion, &c., as compared with the printed rules.

Needless trouble was caused by the late issue of some of the rules, *e.g.*, as to profession and occupation, which were not received till after the preliminary census was begun. In any future census it should be a matter of course that all the rules and instructions relating to it be issued with a clear interval before the preliminary census work begins.

Some doubt was felt as to whether Government servants could safely be employed without special payment in the absence of direct control or authority over them. This fear happily proved groundless.

Agency.

A letter was addressed to the various newspapers appealing to all persons to give the census information to the Enumerator on his application without delay, and also to further the object in view in every way possible. A notice was issued by tom-tom requesting that an adult male person might be left in each house to give information until the Enumerator had called. The Chief Justice of Madras was good enough to close the High Court for two days to allow the numerous clerks of the Court to officiate as Enumerators, and the act was significant to the public of the importance attached to the census. On the 18th February 1881 each Superintendent mustered all his Enumerators at 6 A.M. at a specified place before sending them off to their respective blocks. There was only one enumerator absent out of the whole 905.

No difficulty or opposition was experienced throughout the day of the final census, and the whole of the work of the Enumerators was completed by the evening.

Accuracy of the results.

The results may be regarded as fairly accurate and exhibiting, with a near approximation to truth, the actual population of Madras. The proportion of males to females is maintained in most of the wards or circles. Allowing, however, for a possible error where the males and females are in undue proportions, it will be seen that no large alteration in the totals would occur. The total of course errs by defect. A common superstition among the poorer classes may be noted that it is not lucky to give the names of all the residents of a house.

The chief comment to be made on the arrangements for the census is that the preliminary and the final census should not have been so far apart. Whatever may be necessary in the country there is no doubt that in a large city the final census should immediately follow the preliminary census. There would then be no need for confusing rules as to the persons to be omitted from the preliminary census All would be entered, and sooner the final census followed, the fewer would be the corrections and alterations

Faults in the general scheme and suggestions for the future.

The schedule columns for religion and caste were confusing. The heading over both columns 6 and 7 was religion, while column 6 was also specially headed religion The arrangement was imperfect for all religions, but especially so for the Christian.

Form of Schedule

The whole staff, not only the permanent Municipal staff, but also the Enumerators, paid and unpaid, did their work on the whole intelligently and well. The only temporary paid servants were those Enumerators who were not servants of Government.

PART III.

Containing a general sketch of the system or manner of enumerating the people common to all districts, and of that followed in the areas specially censused.

The arrangements connected with the enumeration were—

General, or those carried out in all districts throughout the Presidency; or

Special, or those which applied only to special circumscribed localities in particular districts.

There was a distinct difference in principle between the two cases: for in the former case the Census was synchronous, *i.e.*, in the schedules the facts relating to the inmates of each house as actually found in it on the night of the 17th February were in all cases recorded on the next day: in the latter it was not so; only the usually resident population of each house was entered, and for the most part the facts recorded were those existing at the time of the Enumerator's visit. In the former case the whole information required in the Enumerator's schedule was collected: in the latter generally only a portion, though in some instances the whole.

General arrangements for enumerating the People.

For the purposes of enumeration the population must be regarded as those who at the time of the taking of the Census are likely to be found in their own or some friend's home, and those persons who either have no homes, or are temporarily absent from them. These two classes were broadly distinguished here as the resident and the floating population. The existence of these two classes had to be contemplated and arranged for in almost every block in the country. For the enumeration of the floating population arrangements would of course have to be made to suit the circumstances under which they were likely to be found, but in the case of the resident population not only was it necessary to ascertain the situation and number of the houses in the country as being the place where the resident population should be looked for, but this information was requisite also to enable the administrative arrangements to be duly made, since from it the number of people to be counted or the work of each Enumerator could roughly be estimated.

House numbering and house registers.

The first operation therefore was the numbering of houses or homes of the resident population and their registration in forms fixed for the purpose. This was generally completed during the months of July and August 1880. Apart from its connection with the Census proper, the statistic is in itself a valuable one; but its value obviously largely depends on what is considered to be a house or home. Very considerable difficulty was experienced here as elsewhere in finding a satisfactory definition of this term. The difficulty largely arose from the tenacity with which the idea of "enclosure" remained planted in the official mind. The definition ultimately and most generally adopted was "the dwelling-place of one or more families with their servants having a separate principal entrance from the public way." So far was the idea of enclosure abandoned that it was ruled that when a house was originally a single one and consisted of a single building facing the street, having a low mud wall round it, and a single entrance from the street, and was inhabited by two divided brothers who, having made a partition of the family property, had run a dividing wall through the house and broken doorways into their respective portions, the house should be numbered as two distinct houses. To each house as above defined a separate serial number was affixed, but ruined houses, bazaars used only for the day, stables and out-houses not usually used for human habitation, were not numbered. For the purposes of numbering the unit taken was usually the village, or in Municipalities and the larger towns the ward or street. To each such numbered house a separate schedule was allotted, and it is from the number of such schedules that the return showing the houses inhabited and uninhabited at the time of the Census has been abstracted. That the house numbering should be properly done was of the first importance for it, will be seen from the Instructions to Enumerators (paper No. III in Part I) that a house is there defined as "a building to which a separate number has been affixed" and the Enumerators are instructed to proceed from "house to house." No classification of houses was attempted in this Presidency.

Return of area.

In considering the Census results the exact area referred to is an important matter. It was also clearly of the first importance to ascertain that no portion of the country had been overlooked, or omitted from the Census operations. The working up of the exact areas dealt with thus not only met two important requirements in itself, but also afforded the higher authorities a ready means of checking the returns of houses, and through these the Supervisor's list. For these reasons therefore and with a view also to furnishing the information required for the Final Census Form No. IV, statistical returns showing the villages, houses, areas, and assessment of the country were ordered to be prepared. For several causes, most notably the inclusion of the unsurveyed portions of districts on mere guess and the omission of Zemindari tracts, the areas as given by the Collectors are

incorrect. In the following statement I give the more reliable figures obtained from the Survey Department.

Districts.	Area in Square Miles as per Statistical Return No. IV referred to in para 14 of Board's instructions (*Vide* paper No. II in Part I).	Area in Square Miles as given in Volume II of the Census Report of 1871.	Area in Square Miles as given by the Survey Department.
1	2	3	4
Ganjam	2,392	8,313	8,311
Vizagapatam	1,938	18,344	17,380
Godávari	5,144 * 913	6,224	7,345
Kistna	7,901	8,036	8,471
Nellore	7,328	8,462	8,739
Cuddapah	8,702	8,367	8,745
Bellary	11,012	11,007	10,843
Sundur State	28		164
Kurnool	7,027	7,358	7,538
Banganapalle State	321		255
Chingleput	2,837	2,753	2,842
North Arcot	6,918	7,139	7,256
South Arcot	4,921	4,873	4,873
Tanjore	3,739	3,654	3,654
Trichinopoly	3,637	3,515	3,561
Pudukóta State	1,114	1,380	1,101
Madura	6,486	9,502	8,401
Tinnevelly	4,835	5,176	5,381
Coimbatore	6,552	7,432	7,842
Nilgiris	1,001	749	957
Salem	7,875	7,483	7,653
South Canara	4,388	3,902	3,902
Malabar	8,200	6,002	† 5,765
Madras	27	27	27
Total including Native States ...	115,266	139,698	141,001

Supervisor's list.

When the house numbering was complete and the return had been checked with the area returns, it was possible to assign the blocks to each Enumerator, and with this object a list known as the Supervisor's list was prepared for each district. This list was a complete return of every village in the district and of every ward or street in a Municipal town, and showed the number of houses in each unit, adopted for the purpose of house numbering. The number of blocks into which that unit was divided was fixed and was recorded on it. In it also were determined the Supervisors' circles, usually groups of 20 villages conveniently situated for control, and the Superintendents' charges. In the rural tracts each charge was with some exceptions conterminous with the revenue divisions assigned to a Tahsildar and a Deputy Tahsildar. Each Municipal town was a charge.

The Supervisor's list was fully scrutinized in the districts; it was also carefully collated with the area returns, district maps, &c., and was examined by every available test in the Central Office. This list when finally settled subserved some very important purposes.

1*st*.—It enabled the district officers to see that every portion of their districts was included in some block, and was therefore brought within the scope of Census operations.

2*nd*.—It enabled the Central Census Office to see that the schedules from every block were received by it.

3*rd*.—It served as an index to the record in the Central Office.

4*th*.—Lastly, perhaps, its most frequent and important use has been as a standard framework into which every block has had to be fitted in the abstracting and tabulation of the schedules.

In order to ensure more completely its use for the last three purposes,—in the rules as to the manner in which the schedules were to be sent in after the final enumeration, its submission corrected so as to correspond with the facts at the time of the final enumeration was carefully provided for. These objects were entirely attained, so much so that except in one or two instances in which the rules were neglected, nothing was necessary in the Central Office, but to receive the records and put them away after examination on the shelves prepared for them. In any future Census, especially one worked on the plan of a Central Office, this list should be

* This is the area of the Bhadráchalam and Rékapalle Taluks transferred to this Presidency in 1874. (*Vide* Board's Proceedings, No. 1729, dated 6th July 1882.)

† The area of the Malabar District, as given by the Superintendent of Revenue Survey, is only 5,763 square miles, and does not include the area of the Cochin Taluk, viz., 2 square miles.

printed for each district and distributed to the district officials and Central Census Office. Without it the latter could not have been worked at all.

Size of a block.

A question of very considerable importance is that of the proper size on the average of each block. A limit of 100 houses having been found to work well in 1871, it was adopted in the present census. The Census Committee was of opinion that 60 houses should be the number taken. The Census Commissioner, too, urged the reduction of the size of the blocks in his memorandum of his inspection of the arrangements in this Presidency. It was then too late, however, to do anything. It will be seen that of the 22 District Officers whose opinions are given in the second part of this appendix, three think more than 100 houses might be given; six adopt 100; eight would give a number less than 100, varying from 60 to 80; two think the size of a block must vary with circumstances; three give no answer. I think myself no absolute rule can be laid down. The number of houses by itself is a very uncertain guide. It is clear that the true elements in the question from the point of view of the enumeration are the number of *persons* to be enumerated and the distance to be travelled. The number of houses gives only an approximate idea of the first. But the matter cannot be looked at solely from the point of view of the enumeration. In the abstracting office we found that it was quite impossible ever to get rightly abstracted a set of schedules containing more than from 200 to 250 persons, since when error occurred the work had to be done all over again. The enormous blocks, containing in Tanjore for instance up to 1,200 people, not only enormously increased the chance of error in abstracting them, but proportionately increased the trouble of finding that error out. It was early found necessary therefore to divide the books of schedules into what were known as "parts" calculated to contain about 200 people. This division largely increased the work of tabulation, but it was unavoidable. In the beginning too the parts were made smaller than was desirable. The conclusion is however that from an abstracting point of view a block should not contain more than 50 to 60 schedules. The average number of parts to a block was 2·3 on the whole Presidency.

In the following statement (marked A) the number of charges, circles and blocks into which the Presidency was divided, with the highest and lowest number of houses in, and the average area of a block as reported by the Collectors, are given.

A.

Districts.	Superintendents.				Supervisors.				Enumerators.				Maximum Number of Houses in a Block.	Minimum Number of Houses in a Block.	Average Area of each Block.
	Paid.		Unpaid.		Paid.		Unpaid.		Paid.		Unpaid.				
	Officials.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.			
															ACRES.
Ganjam	...	...	16	...	...	1	143	31	...	118	388	3,068	Not given.		Not given.
Vizagapatam ...	...	..	16	2	...	...	98	153	...	131	629	4,029	"Not more than 200 houses."		365·28
Godavari	...	...	26			...	118	18	...	53	1,615	2,034	333	3	Not given.
Kistna	...	...	26	.	..	..	147	30	..	20	2,408	671	352	2	1,689[2]
Nellore	...	..	16	...	...	...	160	7	...	...	1,283	1,538	269	3	2,560[3]
Cuddapah ...	...	...	15	.	...	...	143	...	...	78	2,422	260	100	10	1,920
Bellary	...	...	22	...	...	...	187	..	...	56	2,839	1,042	200	1	1,792
Sundur	...	...	1	...	...	..	4	...	...	...	16	15			
Kurnool	...	...	13	1	...	.	67	7	...	5	930	287	303	2	50
Banganapalli ...	...	...	3	...	...	.	14	...	...	.	69	2			Not given.
Madras City ..	...	...	1	...	...	20	20	.	..	403	412		228	156	Not given.
Chingleput ...	...	...	14	...	...	..	93	1	..	50	1,407	568	169	1	1,600
North Arcot ...	...	...*	17	1	...	..	214	120	...	17	3,178	1,416	440	1	981[4]
South Arcot ...	...	..	21	...	..	.	170	2	..	127	4,008	8	357	1	742[5]
Tanjore	...	...	26	1	...	5	209	10	..	40	3,778	117	248	28	642
Trichinopoly ..	...	...	12	...	...	...	108	19	...	9	2,122	358	160	1	923
Pudukota.	...	...	6	..	...		39		..	...	634		160	37	800
Madura	.	..	21	...	...		140	166	..	.	4,628	1,008	240	1	Not given.
Tinnevelly ...	.	...	21	...	..	.	210	46	...	286	2,617	1,457	217	5	680
Coimbatore .	...	..	14	1	...	11	202	28		76	3,026	419	220	4	1,177
Nilgiris	...	...	4	2	..	...	6	6	18	58	85	56	150	50	Not given.
Salem ..	...	..	21	..	...	1	169	13	.	35	3,016	451	† 202	8	‖
South Canara ...	..	.	11	...	..	...	116	21	...	54	1,025	1,441	‡ 169	1	1,200
Malabar		..	28	..	...	..	520	92	..	105	915	10,365	§ 160	10	Not given.
Grand Total ...	...	...	373	8	...	38	3,297	770	18	1,812	*43,546	30,605	..	..	...

The divisions of the country into charges, circles and blocks completed, and the Enumerators having been appointed for each block, they were required to fill in the headings of the schedules from the house registers, and the arrangements for the enumeration of the people were completed.

* In the Madras Municipality out of 445 officials deputed as Enumerators by the Heads of several Departments, only 412 were selected as Enumerators. Hence the difference between this statement and the Statement C. given on page 100.

† Excluding the hills in which the number of houses in a block varied from 706 to 148, and the Denkanikota Forest in which the maximum was 185 and the minimum 3.

‡ This is the number on the mainland and includes 31 uninhabited buildings. In the Laccadives the highest number of houses comprised in a block was 257.

§ In exceptional cases the number ranged from 3 to 199.

‖ 2·06 square miles or 1,318[5] acres (excluding the tracts specially censused) and 1½ square miles or 960 acres in the ordinary plain country.

Owing to the fact that no aid in the record of the Census particulars can be looked for from the people themselves, in this country it is necessary, if the Census is to be synchronous, to record at leisure and prior to the date fixed for the synchronous Census, the facts relating to each person on the assumption that he will subsequently on the fixed date be found in his house, or, as in the present Census, in the house where the Enumerator making the preliminary record finds him and on the date fixed for the synchronous Census merely to correct the preliminary record, so as to bring it into accord with the facts then found existing. Thus it is usually said that there have to be two enumerations—one preliminary and the other final.

Instructions for Enumerators.

Both the preliminary and the final enumeration in this Presidency were made under the instructions for Enumerators drawn up and circulated by the Government of India printed in the first part of this Appendix. These their perusal will show consisted of two parts—

(1) Instructions as to the facts which the Enumerator was to ascertain and the manner in which they were to be recorded; and

(2) Instructions as to the way in which he was to set about ascertaining the required facts.

The first part was kept entirely unchanged in all instructions and rules issued, but the second part was superseded, and such changes were made as circumstances required in special cases. In the general arrangements, however, scarcely any change was made, in the instructions issued by the Government of India, except to adapt them for a final enumeration by day.

Prior to the receipt from the Government of India of the instructions for enumerators referred to above, the Board of Revenue had issued similar instructions. The latter were withdrawn and cancelled. The differences between the two sets of instructions were slight. The most noteworthy were—

(1.) As to the record of visitors at the preliminary enumeration.
(2.) As to the record of families.
(3.) As to the test by which the house in which each person was to be enumerated was to be determined.

The instructions of the Board were, I think, the best in all these cases.

As to the first point. The Board directed that those persons *usually* found at a given house should be entered in the schedule for it, the Government of India that those persons *actually* found there should be entered. One of the chief reasons for carrying out the preliminary enumeration was to enable the Enumerators, by recording beforehand the particulars of the population of their blocks, to avoid as much inquiry and alteration as possible at the time of the final enumeration, at which time their work was intended to be in the main correction only. But the record of the persons actually found in the house at the time of preliminary enumeration, which, of course, omitted usual residents absent and included visitors found there, involved an enormous amount of correction at the final enumeration, and thus defeated one of the main objects of the preliminary enumeration. It is, no doubt, a fundamental principle of all census-taking that each person should be counted where he may happen to be *on the Census night*. The mistake appears to me to lie in the application of this principle which really applies only to the final enumeration, to the preliminary counting which extended over fifteen days. That the same man might be entered in every house in a block was possible under the Government of India instructions.

As to the second point. Under the instructions of the Government of India no record of the number of persons in each natural family was to be made, but under the Board's instructions such a record was to be so. Family was defined to mean "all who live under the same roof and cook and eat their meals together, and also the resident servants of such persons." In a large number of instances, not in all, the Board's instructions in regard to families have been observed, and it is on those instances that the statistics of families in this Presidency are based.

As to the third point. The Board's instructions were that "those persons who slept in the house the night before" were to be entered, but under the Government of India instructions "those persons who were living in and taking their meals from the house" were to be entered.

Apart from the fact that the latter test is in any case clumsy and somewhat difficult of application, it gave rise to a difficulty in regard to a class of the population in this Presidency. It is customary, the Collectors of Chingleput and Ganjam both have brought to notice, for large landlords to require their agricultural laborers to sleep, in their houses, it may be as a guard, away from the houses in which those laborers live, and in consideration of this service, the laborers are then given their evening meal in the landlord's house. Under the Government of India definition it is a question where they should be censused.

Correction of rule about occupation.

After the issuing of the instructions for Enumerators received from the Government of India, and but a few days before the preliminary enumeration began, instructions were received from the Census Commissioner directing the rule laid down for recording occupations to be changed. It became necessary, therefore, to substitute the amended rule No. 17, which alone is printed in the first part of this Appendix, for that before issued. It was possible to introduce in time the new rule into the preliminary enumeration made in the Municipal towns of the Presidency, but not into the rural tracts, though in some districts this was effected, but in many it was necessary to revise the entries. This was begun on the 10th December, after the new rule had been sufficiently explained to the Enumerators, and it was completed by the 15th. The new rule

differed from the old mainly in that it provided for the return of occupations connected with agriculture in all cases, whether agriculture was followed as the chief or merely as a plural occupation, and among agriculturists required their classification with a view to bringing out especially their interest in the land; in that it directed that the occupations of women who follow those of their husbands should be recorded as were those of their husbands, and also that the occupations of those women who had some special employment of their own should be entered.

Rough abstract of the population.

In the 27th rule it was provided that the Enumerators should make a simple abstract of the number of males and females of the resident and floating population in their block. This was provided with two objects: to enable a rough total of the population to be easily obtained; to serve as a check on tabulation. A very much more elaborate abstract was directed to be introduced by the Census Commissioner, but as the instructions were received too late and as it seemed very needlessly complex, it was not required in this Presidency. The simpler abstract has served all the purposes for which it was needed.

Preliminary Enumeration.

The preliminary enumeration embraced only the resident population. It began everywhere on the 15th November and was generally completed by the 30th idem, but in some few instances it was not completed until the middle of December.

Length of time between the Enumerations.

A matter on which some discussion arose was the length of time allowed to elapse between the preliminary and the final Enumerations. In this Presidency the interval was two and-a-half months. The object in leaving this long interval was to ensure time for the thorough supervision of the Enumerators' work by the Supervisors and District Officers, and this it ensured. In some districts, however, this scrutiny was completed some time before the date fixed for the final enumeration, and since every day increased the difference between the state of things found at the preliminary and final enumerations, this interval was a distinct loss. The opinion of many District Officers, with which I coincide, was that the interval was too great. It would on the whole, I think, have been preferable to have begun the preliminary enumeration on the 1st January 1881, were it not for the inconvenience caused by the closing of the Public Offices for the Christmas holidays, which would render very difficult, if not prevent, the meeting of those emergent requirements which always arise at the last moment in operations involving so wide an agency as do those of a census.

There are several classes of the resident population in regard to which it might be expedient to dispense with the preliminary enumeration. These are (1) the inmates of large public or private institutions, as lunatic asylums, barracks, schools, convents, &c.; (2) private householders required to fill up the schedules for their own households. In regard to the former class, in jails alone was the preliminary enumeration dispensed with in this Presidency, as will be seen from the jail rules appended. My own opinion is that the best course to pursue would be to have a preliminary enumeration, but to confine it to the permanent staff of such institutions.

Issue of schedules to householders.

In regard to the second class, the rule in this Presidency first was that only those persons who desired to fill up the schedule for their own houses should be allowed to do so. No one was to be *required* to fill it up. But subsequently, in January 1881, in accordance with instructions from the Census Commissioner, all English-speaking Natives of respectability were to be called on to fill up the schedule, and special instructions were prepared and issued to meet the case. Such persons were not required to rewrite afresh, but to correct the schedules written up at the preliminary enumeration. Even this modified arrangement was, judging from the schedules themselves, by no means a success, and I have no hesitation in saying, that in my own opinion the plan of requiring private householders to fill up the schedules should only be allowed within very narrow limits. The schedules are seldom completely filled up. The meaning of the instructions is utterly misapprehended, and the result is that far more trouble and inconvenience is caused to the public than under the other system, while the information obtained is incorrect. An analysis of the remarks of the twenty-two District officers given in the second part of this Appendix shows that six express an opinion in favor of extension; four are in favor of a modified extension; one states the work to have been indifferently done; one thinks the system cannot be extended; three are very strongly against its extension, and the opinion of seven on the point cannot be gathered.

Final Enumeration.

The preliminary enumeration embraced only the resident population; the final enumeration the resident and the floating population. This enumeration was synchronous throughout the Presidency. By synchronous I mean the widest use of that word, viz., that not only did the inquiry and record relate to and represent the state of things existing at the same point of time, but also that the inquiry, and record in the schedules, were completed throughout the Presidency on one day. In all cases where the general arrangements held, of course the point of time referred to was the night of the 17th February. In most of those localities where special arrangements were made it was not so. By the preliminary Enumeration not only were the Enumerators trained in the work they had to do, and the fact that they understood what was required of them ascertained, but in fact that work was almost entirely done, for the changes among the resident population at the final enumeration were comparatively few. The enumerators' new work was almost entirely in connection with the floating population.

Tickets.

With a view to preventing double enumeration, so likely to occur among all classes of the floating population, and also to bringing forward those persons who largely go to swell this class, viz., the homeless poor who sleep under a tree or on a door-step, the plan of issuing a ticket to each person as he was counted, with instructions to preserve it and to produce it if any one tried to count him again, was adopted in this Presidency in dealing with all classes of the floating population. There was very good reason for supposing that the number of persons in this class in 1871 was very much below what it should have been, and it is satisfactory to find that in the present Census the floating population counted was 618,728 persons against 125,880 roundly in 1871.

Inquiries at the final enumeration made by day.

There was a difference in the manner of counting, at the final enumeration, the resident population in this Presidency from that adopted in any other province. Here the enumerator was required to go round at 6 o'clock in the morning of the 18th and ascertain by inquiry then who were living in the house on the night before. It is clear that in this arrangement no question of principle is involved; the only matter for consideration is whether in this way the persons in the house during the night before can be as accurately ascertained as by a visit during the night-time. It is obviously more convenient from an administrative and indeed all other points of view. The only objection raised by the Government of India to the plan was that in many instances houses would be found empty, or occupied only by females or boys, and with a view to obviating this difficulty it was directed that a notification, inviting the people to leave an adult male member of the family at home until after the visit of the enumerator, should be published in every village and town. A special report was required as to any difficulties from this cause. The reports received may be summed up to be that no difficulty was experienced. The remarks of the Collectors on this point will be found in the second part of this Appendix. In connection with this matter the Collector of North Arcot points out that a difficulty might arise owing to the inmates not knowing, or wilfully misrepresenting, the names and the other particulars of the visitors in their houses. But this objection cannot affect the question of a day or a night enumeration, unless the Enumerator is to have the power of turning out every visitor for inspection *and actually exercises it*. The difficulty is one which arises in a census whenever carried out, and which cannot be met without requiring the Enumerators to exercise, with regard to a very much larger number of persons, inquisitorial powers which it seems at once unnecessary and inexpedient to give them. If the head of a house gives false information he can be punished, and the number of instances in which he is unaware of the required particulars in regard to a visitor in his house must be few, as will be apparent when the nature of those particulars and of Indian society is considered.

Main heads of the floating population.

The floating population may be considered for Census purposes as—

1. Those enumerated under Rule 25 of the Instructions to Enumerators issued by the Government of India.
2. Travellers by railway.
3. Canal population.
4. Malabar boat population.
5. Sea-going population.
6. Soldiers on a march.

Persons enumerated under Rule 25.

The first class comprised broadly the homeless poor and travellers by road. When, as in most of the villages in the Presidency, it might be expected that the number of such persons would be small, the ordinary Enumerator of the block was required to enumerate them, and issue to them a ticket; but when, as in the neighbourhood of the larger towns, or owing to the existence of a large chuttrum (resting-place), or during fairs or festivals, or from any other cause, it might be expected that large numbers of such people would be found, special Enumerators were appointed to count them. In many districts the plan of stationing an Enumerator at convenient intervals on the main lines of road traffic, who was required to count all persons passing him during the night who had no ticket, was adopted. With the ticket system this course is I think unobjectionable, provided the ordinary Enumerators be not relieved of the duty of counting travellers each within his own block. The plan is a valuable one as supplementary to the more general arrangement. In many of the larger towns and municipalities also Special Enumerators were employed to count the floating population. These Special Enumerators were required to work in concert with the Enumerator of the block not independently of him.

Railway census.

The census of persons found within railway limits may be said to be that of passengers by rail. There are but two railway systems in this Presidency—the Madras and South Indian Railway systems. Of passengers of course no preliminary enumeration was possible. As, however, a small number of railway employés live within railway limits, a preliminary enumeration was carried out. This enumeration embraced every one who habitually lived within station limits or elsewhere on the line within its fences. It began on the 1st February and was completed by the 5th. It was in this Presidency a peculiarity of the final enumeration on the railways that the schedules of the resident population

were collected by night. Tickets were issued at the time of enumeration to passengers intending to join a night train and found within railway limits, and to passengers alighting from such a train, but not to passengers in the train at 6 A M. No difficulties of any kind arose. As under the rules every first and second class passenger travelling by rail was required to fill up a schedule for himself, and every member of his household travelling with him, special instructions were prepared and issued to meet the case.

Canal census.

A census of persons afloat on the canals, or on a boat journey, called shortly the boat population, was carried out in this Presidency under the rules annexed. These rules applied to the systems of navigable canals in the Kistna and Godávari Deltas, to the Buckingham Canal throughout its whole length, to the Irrigation Company's Canal in the Kurnool and Cuddapah Districts, to the Vedarniem Salt Canal, to two small canals near Cuddalore, and to the canal in the Malabar and South Canara Districts. As in the case of the railway, to every one but permanent residents found within canal limits a ticket was issued. By canal limits was meant land taken up for use in connection with the canal, and a small area round each lock or stopping place in which the boat population usually cook and sleep. Though it was apprehended that there might be difficulty on the Buckingham Canal, none of any kind arose there or on any other canal.

Malabar boat population.

In the Malabar District special rules were applied to the backwaters. An Enumerator was stationed at each principal landing-place and was required to enumerate all boats coming there, but it was understood that the appointment of these Special Enumerators did not relieve the ordinary Enumerators of the duty of visiting the landing-places in their blocks. This arrangement was necessary, owing to the great breadth of the backwaters on that coast, and the difficulty of assigning reaches to Enumerators, and of traversing them if assigned. A question arose in this district as to the enumeration of persons found afloat on the rivers forming the boundary between British and Native territory. It was decided that, as in the cases where the question arose, the great majority of persons afloat would be subjects of Native States, all persons found at landing-places within British territories should be included in the British Indian Census record, while all persons found afloat should be included in that of the Native States.

Census of the sea-going population.

The principle on which the census of the sea-going population was based was that, if a vessel was, or was presumably in Indian waters on the night of the Census, the persons on board her should be included in the Census, and that such persons should be included with the population of the port in which she was, or at which she first touched after the Census night. The term sea-going population included all persons found in boats anchored so that they could not be boarded at high water directly from the land. For the purposes of the enumeration, the recognized ports of the Presidency were divided into two classes entered in Schedules A and B, and the agency employed in each was different. In all places other than the Schedule A and B ports, the enumeration of the sea-going population was made under the ordinary arrangements, with the exception that to prevent double enumeration every vessel of 15 tons and upwards was supplied with a check ticket wherever she was enumerated. The preliminary enumeration, or what corresponded to it, extended over the seven days prior to the Census night. During this period every vessel in port or arriving at any port was boarded and a form filled up for the crew. This was left in charge of the master. Vessels of 15 tons and upwards carrying passengers were similarly enumerated at the last port of call before the Census night, and the master was supplied with forms in which he was instructed to enter the passengers. The forms left on board were collected on the Census night by an Enumerator who visited all the ships and boats in port. Every vessel entering any port from any other port in British India after the Census night, but before the 1st March, was boarded, and inquiries made whether she had been already enumerated. If she had not been enumerated the enumeration was then made.

Troops on the march.

Troops on the march and in detachments were enumerated under the rules printed in the third part of this Appendix.

Agency.

The general principle which underlay all the census arrangements in this Presidency in connection with agency was that in any given area there should be only one enumerating agency, and that that agency should be responsible for the enumeration of every person found within the limits assigned to it. This principle was departed from in two instances, viz., by the appointment of Enumerators on the main lines of road-traffic to enumerate every one who passed them, and by the appointment of boat Enumerators in Malabar to count all persons arriving at certain landing places. It was distinctly intimated, however, that the appointment of the special Enumerators above mentioned did not relieve the ordinary Enumerators of the responsibility of counting the floating population of their block. The issue of tickets to all the floating population enumerated rendered the risk of double counting owing to the appointment of these special Enumerators impossible or small.

It was also recognized as a principle on which the arrangements were to be made, that the agency employed should be unpaid, *i.e.*, that the census should, as far as possible, be carried out by officers of Government or other official agency without extra remuneration. In April 1880,

a notification was issued directing that all departments should help to the utmost of their power in the taking of the census. Nearly every office and department in the country therefore aided in some way in the work.

With a view to rendering the services of the public servants more generally available it was directed in G.O., 29th January 1881, No. 204, that the Heads of Departments in the districts might declare that the public offices under their control in the district should be closed to the public on the 17th and 18th February, when, in their opinion, the number of hands withdrawn from any office was so great as to prevent the full discharge of its functions; but though the offices were closed to the public, the days were not to be considered holidays, those clerks not employed in connection with census being employed in working off arrears, or in some other appropriate manner.

The carrying out of the census arrangements generally was imposed on the Revenue Department, but as the strength of this department was not numerically equal to the requirements, subject to the control of the Collectors, a large number of officers of other departments were also employed. The census in all Municipalities was carried out by the Municipal Commissioners under the supervision of the Collector, who is *ex-officio* President, except in the case of the Madras City, in which all arrangements were made by the Municipal President.

Where a Military Cantonment was within a Municipality, the census was carried out by the Municipal Commissioners; but when the cantonment was not in a Municipality, the Military authorities conducted the census. Practically in the former case the military officers conducted the census of their regimental lines and institutions, but they worked in conjunction with, not independently of, the Municipal authorities. In Fort St. George, which is not a part of the Madras Municipality, and in the five cantonments in the Presidency not in Municipalities, viz., Wellington, Poonamallee, Pallávaram, St. Thomas' Mount, and Vizianagrum, the Military authorities conducted the census.

The Railway authorities carried out the railway census, the Marine or Sea Customs Department the census of the sea-going population in the Schedule A and B ports respectively, and the Public Works Department the canal census, except in the case of the Vedarniem Salt Canal in Tanjore, on which the Salt Department conducted the census, and of the canals in South Canara and Malabar, which were censused by the Collectors.

It was ordered by Government and was observed as a general rule that the Police should not be employed in the census of houses. Their services were, however, largely availed of as special Enumerators, who may be broadly defined to be those to whom no ordinary dwelling-houses were assigned.

The following statements marked B and C give the particulars of the Agency employed, whether official or non-official and paid or unpaid; and the grades and departments from which that agency was drawn.

B.

Statement showing the Grades from which the Census Officers were drawn.

	Superintendents.				Supervisors.				Enumerators.			
	Paid.		Unpaid.		Paid.		Unpaid.		Paid.		Unpaid.	
	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.
As paid Rs. 100 or upwards	...	...	245	...	...	...	63	...	...	...	18	...
As paid Rs. 50 and less than Rs. 100.	...	...	104	...	...	...	151	...	...	...	48	...
As paid Rs. 30 and less than Rs. 50.	...	...	7	...	...	...	309	...	1	1	183	...
As paid Rs. 20 and less than Rs. 30.	...	...	1	...	...	...	562	1	5	26	832	...
As paid Rs. 15 and less than Rs. 20.	...	...	...	...	...	...	730	...	1	...	853	...
As paid less than Rs. 15	...	...	2	...	...	...	1,398	8	11	159	41,140	4,158
Non-officials	...	...	...	7	...	17	...	588	...	1,511	5	22,169
Honorary Vice-Presidents and Commissioners	...	...	7	...	...	...	36	...	...	...	...	...
Clerks paid on Commission	...	...	...	...	..	...	17	...	...	...	8	..
Stamp Vendors	...	...	...	...	...	...	1	...	...	...	11	...
Grade not given	...	...	4	1	...	21	27	173	...	115	437	4,278
Railway Officials	...	...	8	...	...	...	8	...	...	...	11	...
Grand Total ...	...	...	373	8	...	38	3,297	770	18	1,812	*43,546	30,605

* In the Madras Municipality out of 445 officials deputed as Enumerators by the Heads of several Departments, only 412 were selected as Enumerators. Hence the difference between this statement and the Statement C.

C.

Statement showing the Departments from which the Census Officers were drawn.

	Superintendents.				Supervisors.				Enumerators.			
	Paid.		Unpaid.		Paid.		Unpaid.		Paid.		Unpaid.	
	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.	Officials.	Non-officials.
Revenue Department	..	...	338	..	...	...	2,531	65	...	39	39,373	4,542
Marine do.	...	...	...	...	...	...	4	...	...	...	5	...
Judicial do.	...	...	4	...	..	...	158	...	...	...	958	18
Police do.	...	...	1	..	...	...	139	...	8	...	957	153
Educational do.	...	...	1	...	...	...	40	..	...	..	190	4
Registration do.	...	..	.	...	..	...	57	..	1	...	71	1
Jail do.	..	...	..	...	...	...	...	...	...	...	6	...
Postal do.	..	...	...	...	..	...	...	...	1	...	31	...
Public Works do.	...	.	5	..	..	.	18	...	...	...	74	...
Forest do.	..	...	1	...	...	...	18	..	...	...	48	...
Medical do.	...	...	6	...	...	...	3	...	...	...	12	...
Revenue Survey Department	...	...	..	...	...	...	24	...	..	...	342	...
Revenue Settlement do.	...	.	...	.	...	...	19	...	...	...	63	...
Railway Department	...	...	3	...	...	...	6	...	...	...	34	..
Salt do.	...	...	...	.	...	...	6	...	.		22	...
Municipal do.	...	...	10	3	...	20	103	13	6	101	606	7
Local Fund do.	.		3	.	...	...	108	..	..	...	512	20
Vaccine do.	...	...	...	...	...	...	17	...	..	...	30	...
Military do.		...	...	...	...	...	5	...	...	...	105	...
Ecclesiastical do.	..	..	...	.	.	..	..	...	..	...	1	...
Bank Office	..	..	...	..	...		..	.	2	..	..	...
Non-officials. Zemindary, Shrotriem and Inam Establishments.	...	...	1	1	...	...	40	344	..	...	108	7,146
Non-officials. Village Establishments in Zemindary Taluks.												
Non-officials. Others—												
Non-officials	...	...	...	4	..	18	...	326	...	1,672	...	18,642
Non-officials. Devastanam servants	...	...	...	...	...	...	...	...	..	...	16	...
Non-officials. Merchants and other respectable persons	...	...	..	...	...	...	...	23	..	...	...	92
Total ...	...	...	1	5	...	18	40	693	...	1,672	124	25,880
Grand Total ...	..	...	373	8	...	38	3,296	771	18	1,812	*43,564	30,620

Abstract relating to Enumerators.

	Enumerators.		
	Paid.	Unpaid.	Total.
Ordinary Enumerators	1,094	68,450	69,544
Special Enumerators—			
(a) for wild tribes	135	245	380
(b) for travellers	18	1,450	1,468
(c) for boats	4	158	162
(d) for cartmen	..	126	126
(e) for jails	...	15	15
(f) for sea-going population	3	27	30
(g) for festivals	...	31	31
(h) for railways	...	29	29
(i) for market places	...	11	11
(j) miscellaneous	5	176	181
Total ...	1,259	70,718	71,977
Add figures for which details are not available.	571	3,433	4,004
Grand Total ...	1,830	74,151	75,981

Hence there was on the average one person employed in the Census operations to every 387 of the population. The like average in 1871 was 436. Each Enumerator, however, counted on the average 410 persons.

Changes in the system explained.

It will be seen from the second part of this Appendix that all the District Officers consider that all instructions relating to the census should be issued a considerable time beforehand and when issued should not have been changed. They urge the extreme difficulty of getting the instructions properly

* In the Madras Municipality out of 445 officials deputed as Enumerators by the Heads of several Departments, only 412 were selected as Enumerators. Hence the difference between this statement and the Statements A and B.

carried out without time and the confusion of ideas resulting from frequent change among a body of men of the class of our Enumerators. I think the complaint well founded. The cause of its arising was the very late date at which the appointments of the Census Commissioner and of myself were made. The preliminary enumeration was to begin here on the 15th November, yet the Census Commissioner entered on his duties only after the middle of September, and my appointment dated only from the 1st of that month. At that time nothing had been done except to get the schedules printed and the general instructions issued. It was therefore unavoidable that the rules relating to the census of all the special classes should issue late, since I had had no connection with the census even as a District Officer prior to my appointment, and I had not only first to learn the subject generally and what had been done here already, but had also to draw up and issue all the rules. The instructions had in addition to be supplemented in different minor points. Some of these points though apparently trivial were of very great importance owing to the magnitude of the operations, since a little forethought and arrangement in regard to them at the outset would save an immense amount of time and trouble at some subsequent point of the operations. In the instructions and rules which I issued no change of importance was made, but at the instance of the Census Commissioner or under the orders of the Government of India the following very important changes in orders already issued were made, *viz.*, the change in the definition of the term "house;" the supersession of the Board's instructions for Enumerators, and the issue in their place of those drawn up by the Government of India; the change in the rule as to the manner in which occupations were to be recorded; and the change in the rule regarding the issue of private schedules. It is to these changes that the District Officers generally refer.

Accuracy of the enumeration.

Every District Officer is of opinion that the enumeration has been accurately made except the Collector of Ganjam. In this view I entirely concur. In regard to the exception I can speak only from what I have seen in the central office of the preparations for the taking of the census, of the schedules, and of the way in which they have been sent up; and I have no hesitation in saying that the census of Ganjam has been the worst done in the Presidency. The packing rules were in several instances neglected, the Supervisor's list was confused and inaccurate, the schedules were badly written and badly translated, and the result has been that in every stage of the abstracting, the working up of the district has taken at least twice the time that it would have taken had the District Officials seen their part of the work properly done. This estimate is borne out in reality by the statement in the next paragraph, for Ganjam is bad in every item.

Criterion of the accuracy of the enumeration.

When the Collectors state that the census was accurately taken, they mean (1) that the record contains all the members of the population, and (2) that the particulars were accurately recorded for each individual. The latter is the most important matter. The accuracy of the record will in the long run vary with the care and attention bestowed on its preparation. If we suppose that the entry relating to every person was scrutinized with the utmost possible care, it is clear that in no case would the Enumerator omit to fill up every particular for each individual, and it is clear also that if the supervision were perfect no Enumerator would be allowed to leave out the entry of any particular for any individual. Now in regard to religion, civil condition, and age we are morally certain that the abstracting and compilation reproduces exactly the statements of the Enumerators. The rule under which an item was treated as not stated was that only those cases should be placed under that head in which no attempt at all had been made to fill up the particular. If there was a dot or a dash, it was clear the Enumerator had stated something and his meaning had to be construed by the circumstances of each case. In the number of not stated cases, therefore, under the items of religion, civil condition, and age we have a test or measure of the care and attention with which the Enumerators worked, and of the efficiency of the supervision exercised over them. It is obvious that that care was greatest when the ratio of not stated cases under the above items per 10,000 of the whole population was least. In the accompanying statement the districts are arranged in order of merit as judged by this criterion :—

Districts.	1 Religion not stated.		2 Civil Condition not stated.		3 Age not stated.		4 Total of Columns 1, 2 & 3.	5 Total Population of the Districts.	6 Ratio of Column 4 to every 10,000 of the whole Population.
	Males.	Females.	Males.	Females.	Males.	Females.			
1. Kistna	56	48	123	119	106	113	565	1,548,480	3·6
2. Kurnool	2	3	76	115	65	71	332	709,305	4·7
3. Nellore	32	30	184	210	113	102	671	1,220,236	5·5
4. Cuddapah	5	4	273	243	63	52	640	1,121,038	5·7
5. Bellary	36	35	231	293	121	106	822	1,336,696	6·1
6. Godávari	22	14	371	375	164	171	1,117	1,780,613	6·3
7. North Arcot ...	2	...	503	546	90	102	1,243	1,817,814	6·8
8. Vizagapatam ...	89	70	292	416	226	241	1,334	1,790,468	7·4
9. Malabar	42	40	881	862	248	196	2,269	2,365,035	9·6
10. Salem	9	6	670	726	75	77	1,563	1,599,595	9·7
11. Madura	1	1	986	936	98	145	2,167	2,168,680	10·0
12. Trichinopoly .	5	11	696	669	56	87	1,524	1,215,033	12·5

Districts.	1 Religion not stated.		2 Civil Condition not stated.		3 Age not stated.		4 Total of Columns 1, 2 & 3.	5 Total Population of the Districts.	6 Ratio of Column 4 to every 10,000 of the whole Population.
	Males.	Females	Males.	Females.	Males.	Females			
13. South Arcot ...	1	2	1,127	1,172	70	74	2,446	1,814,738	13 5
14 Madras City ...	49	14	248	176	42	61	590	405,848	14 5
15. Nilgiris	...		56	54	13	10	133	91,034	14·6
16 Ganjam	282	254	445	499	432	436	2,348	1,503,301	15·6
17. Tanjore	10	7	1,653	1,520	94	120	3,404	2,130,383	15·9
18. Pudukóta Territory ..	..	.	334	299	4	6	643	302,127	21·3
19. Chingleput .	9	7	1,044	981	34	38	2,113	981,381	21·5
20. Tinnevelly ...	24	27	1,835	1,842	83	93	3,904	1,699,747	22 9
21. Coimbatore	14	16	2,013	2,131	84	106	4,364	1,657,690	26 8
22 South Canara .	71	69	9,796	8,963	70	74	19,043	959,514	198·4

The "Not stated" cases under Civil Condition are almost entirely persons under 10 years of age, as may be seen from Final Census Table No. VI. It might perhaps have been fairer to have taken the particulars relating to persons over 10 years old.

Special Arrangements.

The distinguishing feature of the special arrangements in this Presidency was that in all such cases the census was not synchronous. It embraced those persons usually to be found in a given locality, or actually found present when the Enumerator visited the spot. Except in a few instances no schedules were received from the Agency Tracts and Rampa. The returns were merely abstracts for each house. The particulars were recorded in schedules in all other instances. The localities in which special arrangements were put in force were the tracts of country inhabited by the wild tribes in the Agency Tracts of Ganjam and Vizagapatam, and in the Rampa country in Godávari; the Chentzus in the Nallamallai Hills in Kurnool; the hillmen in the Kulroyen Hills in South Arcot and Salem; the hillmen in the Kolimalai, Pachamalle, Periya and Chinna Kalroyen, Chitori, Yelligiri, and Javadi Hills in the latter district; the hillmen on the Pachamalle Hills in Trichinopoly; and the jungle tribes in the Western Ghâts in the districts of Tinnevelly, Coimbatore, and Malabar. On the Nilgiris these tribes seem to have been counted in the ordinary way, except that the Enumerators were accompanied by some of the tribe.

Ganjam.

The following account of the taking of the census in the Ganjam Hill Tracts is extracted from a report by Mr. C. T. MacCartie, C.S., Special Assistant Agent in Ganjam, dated 4th May 1881. The rest of this officer's interesting report on the people inhabiting these tracts will be found in the second part of this Appendix :—

"The tracts with the enumeration of which I was entrusted comprised the Goomsur Maliahs inclusive of the Chokapad Khandam, the Chinna Kimedi Maliahs, the small territory of Kotingia, and the hill tracts of the Bodogodo, Pedda Kimedi, and Surangi Zemindaries, the circumstances of which called for exceptional treatment, save the Chokapad plateau in the Goomsur Maliahs, where the synchronous census was carried out by unpaid agency under the regulations prescribed for the Goomsur Taluk. The preliminary enumeration here took place in November, and the final census was successfully completed in February 1881.

"The Khandam was formed into one block under the Revenue Gumastah who supervised the labors of 13 Enumerators, of whom one was the Curnam, seven were Schoolmasters, two were Vaccinators, and three subordinates from the Sub-Magistrate's office. No difficulty was here anticipated or encountered, as proximity to the low country has civilized the Khonds of this plateau to a certain extent and rendered them less liable to scares than their wilder brethren to the west and south, for whose enumeration special arrangements were necessitated by the wildness and sparsity of the population, which absolutely precluded the possibility of a synchronous census.

"With the exception of a fortunately limited area inhabited by pure Khond and Saura communities owing allegiance to no alien chiefs, for whose enumeration separate arrangements had to be made which will be noticed below, advantage was taken of the machinery existing throughout the rest of the Maliahs where the unit is a Khond village, a series of villages forms a mutta under a Khond Mutta Moliko or Majji, and a series of muttas constitutes the jurisdiction of an Oriya chief known as Bissozi or Behara Dholloze in the Goomsur Maliahs and Patros in Chinna Kimedi and Pedda Kimedi.

"To these chieftains and their establishments was entrusted the duty of preparing the preliminary registers of villages and population during the months of October and November 1880, which, when ready, were delivered to the three Sub-Magistrates who under my orders proceeded to tabulate a villagewar statement, a modified form of the low country Enumerator's schedule, reserving a blank space at the foot of each village and mutta total for such subsequent corrections, as subsequent revision might render necessary.

"A separate book or sheet was prepared for each series of muttas forming the jurisdiction of a local chief, and this block was returned to him not later than December 15th with orders to

revise the population of each mutta and village between that date and January 31st and to make the necessary corrections in the totals of each village by adding the number of births and new arrivals since the preparation of the preliminary list, or by subtracting deaths as the case might be.

"These orders were punctually obeyed and the amended lists came into the Sub-Magistrates' offices during February, when the enumeration was completed. In collecting the necessary information for the preliminary registers from the Khond village heads, the agency of pebbles was employed to facilitate the process of counting, a most repulsive art to the Khond memory, which, without some such mechanical aid to check off the series of tens, plunges into depths of confusion in attempting to deal with aggregates of figures.

"The revision caused less difficulty, as in elementary communities births and deaths are easily remembered, especially where the totals of villages do not run high. During this process the Sub-Magistrates travelled assiduously in order to check the accuracy of the Patros' returns and to afford such assistance as lay in their power. They speak highly of the general correctness of the figures collected, and my own inquiries have led me to form the same opinion. A census was taken in the previous decade, but the work seems to have been somewhat desultory in execution, as it was spread over a period of three years—1871 to 1874—when the returns went in and it was also unrevised. These facts should be borne in mind when a comparison is instituted between the results of the former and present enumeration which from first to last occupied about three months.

"The areas alluded to above as devoid of any local machinery are the Otra and Bara and Digi Muttas in the Goomsúr Maliahs, the Daringabady and Grenobady Muttas also known as the Surada Maliahs in Chinna Kimedi, both of which are inhabited by Khonds and the pure Saura tracts known as the Surangi Maliahs to the south. In all these places each village has a headman known variously as Moliks podara or Gomongo, but these persons were too ignorant to be entrusted with the task of collecting the preliminary information. This duty, therefore, devolved on the servants of Government, and the revision was carried out by the Sub-Magistrates and their establishments in person. In the Goomsúr Maliahs the schoolmasters furnished the preliminary registers, in Daringabady the services of the Station Head Constable were utilized, and in the Surangi country, where there are no Police and no schools, the Sub-Magistrate of Ramagiri and his establishment collected the preliminary figures and revised them afterwards."

Vizagapatam.

The following is a short sketch of the arrangements for censusing the hill tracts in the Vizagapatam District.

These hill tracts consist of the following localities and divisions:—

1. Nowrangapore Taluk.
2. Kotepad Taluk.
3. Malkangiri Taluk.
4. Koraput Taluk (excluding Hill Pachipenta, Hill Madugula, and Kasepuram).
5. Rayaghada Taluk.
6. Gunupur Taluk.
7. Hill Pachipenta Taluk.
8. Hill Madugula Taluk.
9. Hill Golgonda Taluk.
10. Agency villages in Golgonda below the hills.
11. Agency villages in Veravilli Taluk.
12. Agency villages in Salur Taluk.
13. Agency villages in Parvatipur Taluk.
14. The three Hill Muttas in Palkonda Taluk.
15. The Agency villages in Srungavarapukota Taluk.

For each block there was an Enumerator. These were, where possible, Government servants. They were to be paid 25 rupees in some parts and 15 in others for the job, but it was found necessary largely to exceed these amounts. It was intended to have a house numbering with a house register, and that subsequently the Enumerator should visit the numbered houses; but this was not completely carried out. The enumerations embraced only the usually resident population. For each house there was one entry in the forms, and in each form one village. The enumeration would, it was originally supposed, be completed in a month, but it extended to close on eight months. It began, early in January, and the last schedules were not sent in until the middle of August. The causes of the delay were the inefficiency of the agency available, partly owing to the difficulty in obtaining good men to do the work, and partly to sickness among the staff. When the Enumerator had completed the record for his villages it was sent into the office of the Deputy Tahsildar of the division, where the Oriya schedules were translated into Telugu and the caste and tribes classified. This classification was done under a district order. It delayed very much the submission of the forms, and consequently the working up of the rough totals of the population, and owing to the incompleteness of the figures sent up by the Collector has rendered those rough totals altogether inaccurate. The figures have had to be worked up independently in Madras.

Godávari. The only portion of the Godávari District in which special arrangements were made was the Rampa country. In regard to this point the Collector writes :—

the Rampa country it was not however considered advisable to adhere to the proposals made in 1878, owing to the late disturbances in that tract. In the first place I proposed to exclude that tract altogether from the census operations, and the Board of Revenue also recommended that this and similar tracts of the Vizagapatam District should be excluded, but the Government, not agreeing to their exclusion altogether, left it to the Agents to obtain the best information they could, having regard to the circumstances of the country. Then the preliminary enumeration was dispensed with, and for the final census the Principal Assistant Agent proposed that the Tahsildar be directed to get the work done entirely through the Muttadars and headmen, by making each village head to go on any day within a week from the day of census from house to house and denote by knots on two pieces of cord the number of males and females, respectively, until he had completed the tale of his village. I also gave instructions that before this the fact that it was proposed to take a census should be communicated to the several Muttadars and its objects explained to them, especially making them understand that the census was being taken everywhere and not in Rampa alone. This was accordingly communicated, and at the time of the final enumeration it was after all arranged that the Deputy Tahsildar of Kottapalle should be at Chódavaram from the 10th to the 18th of February, and during that period should send for the headmen of the different villages in Rampa and ascertain from them the number of males and females living in each village. The inquiry having thus been completed, a statement was prepared by the Deputy Tahsildar showing for each of the several villages in Rampa the particulars as to the number of males and females as well as the number of houses. This was all the record that was obtained for that tract."

Kurnool. The special arrangements for enumerating the Chentzus in Nallamallai in Kurnool are thus described by the Collector :—

"No deviations were made from the system prescribed for the Presidency generally except in the case of the Chentzus (hillmen of the Nallamallais), the final enumeration of whom was reported to have been conducted on different dates as particularized below :—

Taluks.	Dates on which final enumeration was made.
Cumbum and Sirvél	18th February 1881.
Nandyál	15th, 16th, and 17th February 1881.
Márkápur and Nandikótkur	17th night and 18th morning."

The reason why this enumeration was made in the Nandyál Taluk on three successive days, was because one Enumerator had to look after three different Chentzu "Gudems" (hamlets). The Chentzus seldom visit the plains. The work of enumerating them was done by Taluk Gumastahs in Cumbum, by Revenue Inspectors in Nandyál, by Curnams in Márkápur and Sirvél, and by both Curnams and paid non-officials in Nandikótkur. In some instances the Chentzus were got together by presents of one rupee to each headman, in others by the attraction of a feed.

Salem, South Arcot, Trichinopoly, and Coimbatore. In the census of the hill tracts in Salem, South Arcot, Trichinopoly, and Coimbatore there was nothing really special except that the census was not strictly synchronous.

Tinnevelly. In Tinnevelly the census of the hill tribes was made by the Forest Department under the orders of the Collector. The hillmen numbered only 493 individuals. To census this number 3 Supervisors and 15 Enumerators were employed. Of the latter 13 were officials and 2 non-officials. There was no preliminary enumeration, but the final enumeration was taken in one day, viz., 18th February 1881.

Malabar. The enumeration of the hill tribes in Malabar is thus described by the Collector in paragraph 3 of his report :—

"The ordinary system prescribed for the Presidency was strictly adhered to throughout the district generally. The only deviation from it was in the case of the hill tribes who could not be censused in the ordinary way. They have no settled place of abode, but roam about the vast forests that skirt the slopes of the Western Ghâts. They are by nature a timid race, and the mere sight of a man who does not happen to be of their own number would cause them to fly into the recesses of the jungles where all chance of discovering them is impossible. These semi-barbarous men know of no rule or system, and can only be dealt with through their liege-lords or Mupans, who possess great influence over them. The services of these chiefs were first secured and by their means the men, women, and children were assembled at convenient places appointed for the purpose. Here they were enumerated by Tahsildars, Deputy Tahsildars, and Revenue Inspectors, and in some cases by the local Jenmies or chiefs who conducted the work under the immediate supervision of some responsible official. This enumeration lasted from 15th to 30th November, except in Kottayam, where it was prolonged till the 15th of December."

The conclusion which, I think, is to be drawn from a consideration of the cases in which special arrangements were made, is that except in the Agency Tracts of Ganjam, Vizagapatam,

and Godávari, and in the Malabar District, there is no real necessity for any departure from the ordinary arrangements carried out in the rest of the Presidency, and that in any future census no such deviation should be allowed.

Census of British Subjects in the French Territory.

Under instructions received from the Government of India early in February last, a census of British subjects residing in French Territory was also taken synchronously with the census of British India. The enumeration was generally conducted by the local French authorities at the several dependencies, to whom the necessary forms and instructions were supplied by the District Officers.

The French settlements in this Presidency are (1) Pondicherry, the seat of the French Government in the district of South Arcot; (2) Karikal in the Tanjore District; (3) Mahé, in Malabar and (4) Yanam in the Godávari District.

Pondicherry.

Though instructions on the subjects were received so late as the 1st February, His Excellency the Governor of Pondicherry was able to arrange, at this settlement, for a preliminary enumeration, which was finally revised on the 18th February.

Four distinct classes of population were dealt with, viz.;—

British subjects resident within French Territory;
British subjects who travelling by road entered the French Territory from morning to 2 P.M. of the 18th February;
British subjects who were employed on the Pondicherry Branch of the South Indian Railway;
British subjects who were waiting at Railway Stations in French Territory in order to get into the first train on the morning of the 18th, and who had not been previously counted by Enumerators of Blocks employed by the French Government.

The census of British subjects *resident in the French Territory* was conducted entirely by the French authorities. The enumerators were directed to question each person counted by them whether he had been previously enumerated within British Territory, and when such had been the case, a note was made of the name of the British village when he had been counted.

The frontier enumeration of *travellers by road* was effected through the agency of the Sayer or British Land Customs Establishment, whose stations surround French limits. These were directed to enumerate all British subjects who entered French Territory on the 18th by the high roads, and to furnish such of them as had not been previously counted with tickets. This enumeration was discontinued after 2 P.M., as it was presumed that British subjects who entered French Territory after that hour, would have been previously censused by a British Enumerator. In order to prevent British subjects who had been censused by French Officers while passing along a road within French Territory, being again counted by others at the houses to which they might have ultimately gone in the course of the day, the French Enumerators were instructed to furnish such persons with tickets.

The census of *Railway employés* was made by the Railway Department.

Travellers by rail waiting at French stations were counted by Special French Enumerators employed for the purpose.

Printed copies of the special notice addressed to English-knowing house-holders were also supplied to the French Government.

It will thus be seen that the arrangements for the census of British subjects at Pondicherry were complete in every detail.

Karikal.

At Karikal, the French Commissary of Police, to whom arrangements seem to have been entrusted, states his method of procedure to have been that he had, first of all, "a list drawn up of the inhabitants not included in the French lists, and afterwards caused each house of these last to be visited for taking the census, care being taken to question them as to the place of their birth." The result was that 4,287 British subjects were enumerated in 1,553 houses.

Mahé.

The census at Mahé was conducted under the supervision of the French Mayor of the town assisted by a Taluk Sheristadar from Malabar. The only difficulty felt was as to who was to be considered a British subject. The reason of this difficulty was that women on the death of their husbands, or divorce, or for other causes often reverted to their own "Tarwad." This was got over by asking the people whether they considered themselves French or British subjects. A preliminary enumeration on plain paper was taken on the 11th February. The entries were

then copied into the schedules by the 16th, and the final enumeration was conducted by twenty-eight Enumerators. The results are :—

Houses	525
Males	618
Females	895
Total ...	1,513

The population is described by the Acting Sub-Collector as a wandering one.

Yanam.

Yanam seems to be the only place where there was no preliminary enumeration of any sort. The *Chef de Service* was supplied with the necessary forms and instructions. Two Enumerators were employed by the French authorities and the schedules were prepared on the 18th.

PART IV.

The preparation of the Returns.

Preparation of the rough total of the population.

After the final enumeration was over, the entries in the schedules were checked in the districts by the Supervisors. The schedules were then arranged and the books were checked by reference to the house registers, and were forwarded as a rule to Taluk offices, where they were packed in accordance with the rules in that behalf and were forwarded to the Central office. On receipt of the schedules in that office the preparation of the rough or approximate statements of the population was at once put in hand.

The first bundles of Telugu schedules were received from the Bellary District on the 12th of March 1881; the first Tamil schedules were received from the Salem District on the same date; the first Malayalam schedules were received on the 22nd March; and the first Canarese schedules on the 6th April. The compilation of the statements of the Telugu districts was, with the exception of parts of a few districts, virtually completed on the 26th April; of the Tamil districts on the 21st April; of Malabar on the 9th April; and of South Canara on the 3rd May. Thus the compilation of the Telugu districts occupied 46 days, of the Tamil 41 days, of Malabar 19 days, and of South Canara 28 days.

The first operation preparatory to compilation was copying out of the sanctioned Supervisors' list by blocks into two printed forms, one to serve as an index for the record, the other for posting the population and the houses in each block. The latter corresponded in form with the statements submitted to the Board.

On a bundle of schedules being received and opened, the invoice or contents list was first compared with the extract Supervisors' list received from the district. The next step was to remove the slip and compare the block books with the contents list, the number of books in each block being entered in the list prepared for the Record Department above mentioned. The slips removed in order and placed on a wire were sent to a separate division of the office, in which the figures entered in the slips were arithmetically checked and posted by circles and taluks in the second list above referred to. The lists thus posted were then passed on to another division of the office where the figures were totalled and abstracts for the taluks of each district prepared. Lastly, the posted statements were compared with the slips and examined by the sanctioned Supervisors' list to ascertain that no blocks had been omitted, and any corrections found necessary were then made. The operations were thus:—

(1.) The preparation of the posting and record lists.
(2.) The examination of the bundles and the removal of the slips.
(3.) The posting of the figures.
(4.) The totalling up of the figures so posted.
(5.) The comparison and checking of the statements with the slips and sanctioned Supervisors' lists.

In the annexed statement I give the number of men employed for one day in carrying out each of the above operations.

—	Telugu Districts.	Tamil Districts.	Malabar District.	South Canara District	Total.
I. The preparation of the posting and record lists ..	133	138	29	Included with Telugu and Tamil	300
II. The examination of the bundles and the removal of the slips	248	295	69	26	638
III. The posting of the figures	100	101	23	10	234
IV. The totalling up of the figures so posted ..	99	153	35	12	299
V. The comparison and checking of the statements with the slips and sanctioned Supervisors' lists.	77	112	17	6	212
Total ..	657	799	173	54	1,683

Thus the preparation of the rough statements of population employed 1,683 men for one day exclusive of the subordinate supervising officers, six in number. On an average of the period they were employed, the number in each department is as shown below:—

Departments.	No of Men.
Telugu	14
Tamil	19
Malayalam	9
Canarese	2
Total ...	44

In the annexed statement I contrast the rough totals of the population as above arrived at for each district, uncorrected and corrected for errors made in this office, with the true totals arrived at by tabulation.

1	2			3			4			5			6		
District.	Population as published in the rough Totals of the Population.			Population as derived from the rough Totals of the Enumerators after mistakes in the compiling in Madras have been rectified.			Population as ascertained by Tabulation.			Excess (+) or Deficit (−) in Column 4 as compared with Column 2.			Excess (+) or Deficit (−) in Column 4 as compared with Column 3.		
	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.
1. Ganjam	736,195	759,815	1,496,010	739,555	765,460	1,505,015	739,423	763,878	1,503,301	+ 3,228	+ 4,063	+ 7,291	− 132	− 1,582	− 1,714
2. Vizagapatam	916,471	905,424	1,822,895	896,564	895,016	1,791,580	897,116	893,352	1,790,468	− 19,355	− 13,072	− 32,427	+ 552	− 1,664	− 1,112
3. Godávari	883,467	898,510	1,781,967	882,884	898,050	1,780,934	883,526	897,087	1,780,613	+ 69	− 1,423	− 1,354	+ 642	− 963	− 321
4. Kistna	780,446	768,061	1,548,507	780,581	768,188	1,548,769	780,588	767,892	1,548,480	+ 142	− 169	− 27	+ 7	− 296	− 289
5. Nellore	614,907	605,428	1,220,335	614,771	605,278	1,220,049	615,332	604,904	1,220,236	+ 425	− 524	− 99	+ 561	− 374	+ 187
6. Cuddapah	569,194	550,924	1,120,118	570,015	551,540	1,121,555	569,970	551,068	1,121,038	+ 776	+ 144	+ 920	− 45	− 472	− 517
7. Kurnool	359,996	351,561	711,557	358,385	349,845	708,230	359,354	349,951	709,305	− 642	− 1,610	− 2,252	+ 969	+ 106	+ 1,075
8. Bellary	679,334	660,429	1,339,763	679,527	658,188	1,337,715	679,400	657,296	1,336,696	+ 66	− 3,133	− 3,067	− 127	− 892	− 1,019
9. Chingleput	494,823	490,731	985,554	492,953	488,829	981,782	492,626	488,755	981,381	− 2,197	− 1,976	− 4,173	− 327	− 74	− 401
10. North Arcot	906,346	911,215	1,817,561	907,046	911,215	1,818,261	907,354	910,460	1,817,814	+ 1,008	− 755	+ 253	+ 308	− 755	− 447
11. South Arcot	906,121	909,030	1,815,151	906,057	909,010	1,815,067	905,771	908,967	1,814,738	− 350	− 63	− 413	− 286	− 43	− 329
12. Tanjore	1,031,002	1,109,583	2,140,585	1,025,926	1,103,235	2,129,161	1,026,528	1,103,855	2,130,383	− 4,474	− 5,728	− 10,202	+ 602	+ 620	+ 1,222
13. Trichinopoly	587,120	629,383	1,216,503	587,088	629,729	1,216,817	586,434	628,599	1,215,033	− 686	− 784	− 1,470	− 654	− 1,130	− 1,784
14. Madura	1,032,569	1,134,812	2,167,381	1,033,729	1,135,807	2,169,536	1,032,707	1,135,973	2,168,680	+ 138	+ 1,161	+ 1,299	− 1,022	+ 166	− 856
15. Tinnevelly	826,025	874,885	1,700,910	826,375	874,823	1,701,198	825,887	873,860	1,699,747	− 138	− 1,025	− 1,163	− 488	− 963	− 1,451
16. Salem	778,209	821,216	1,599,425	777,603	820,101	1,597,704	778,483	821,112	1,599,595	+ 274	− 104	+ 170	+ 880	+ 1,011	+ 1,891
17. Coimbatore	806,797	851,770	1,658,567	807,198	852,017	1,659,215	806,859	850,831	1,657,690	+ 62	− 939	− 877	− 339	− 1,186	− 1,525
18. Nílgiris	50,793	39,840	90,633	50,727	39,840	90,567	50,976	40,058	91,034	+ 183	+ 218	+ 401	+ 249	+ 218	+ 467
19. Malabar	1,156,948	1,176,904	2,333,852	1,169,418	1,189,606	2,359,024	1,174,274	1,190,761	2,365,035	+ 17,326	+ 13,857	+ 31,183	+ 4,856	+ 1,155	+ 6,011
20. South Canara	471,953	487,067	959,020	472,302	487,739	960,041	472,236	487,278	959,514	+ 283	+ 211	+ 494	− 66	− 461	− 527
21. Madras City	200,124	205,993	406,117	200,124	205,993	406,117	200,170	205,678	405,848	+ 46	− 315	− 269	+ 46	− 315	− 269
Total	14,788,830	15,143,581	29,932,411	14,778,828	15,139,509	29,918,337	14,785,014	15,131,615	29,916,629	− 3,816	− 11,966	− 15,782	+ 6,186	− 7,894	− 1,708
Pudukóta Territory	143,161	159,642	302,803	142,793	159,451	302,244	142,810	159,317	302,127	− 351	− 325	− 676	+ 17	− 134	− 117
Total including Pudukóta Territory	14,931,991	15,303,223	30,235,214	14,921,621	15,298,960	30,220,581	14,927,824	15,290,932	30,218,756	− 4,167	− 12,291	− 16,458	+ 6,203	− 8,028	− 1,825
Agency Tracts specially censused. Ganjam	130,022	116,367	246,389	129,654	116,011	245,665	130,042	116,261	246,303	+ 20	− 106	− 86	+ 388	+ 250	+ 638
Vizagapatam	..	..	* 667,290	..	..	* 693,528	357,734	336,939	694,673	..	..	+ 27,383	..	..	+ 1,145
Godávari	5,443	5,456	10,899	5,443	5,456	10,899	5,443	5,456	10,899	..	..	..	..	..	..
Total for the Agency Tracts	135,465	121,823	257,288	135,097	121,467	256,564	135,485	121,717	257,202	+ 20	− 106	− 86	+ 388	+ 250	+ 638
			667,290			693,528	357,734	336,939	694,673			+ 27,383			+ 1,145
			924,578			950,092	493,219	458,656	951,875			+ 27,297			+ 1,783
Grand Total for the Presidency	15,067,456	15,425,046	30,492,502	15,056,718	15,420,427	30,477,145	15,063,309	15,412,649	30,475,958	− 4,147	− 12,397	− 16,544	+ 6,591	− 7,778	− 1,187
			667,290			693,528	357,734	336,939	694,673			+ 27,383			+ 1,145
			31,159,792			31,170,673	15,421,043	15,749,588	31,170,631			+ 10,839			− 42

* Details of sex not known.

The consideration of the preparation of the final census returns resolves itself into two branches—

A. The abstracting of the facts as stated in the schedules relating to each person singly and the grouping of those facts into minor totals by blocks or "parts."

B. The tabulation of those minor totals under the various heads of fact which they represent.

Difference between abstracting and tabulation.

There is essentially, perhaps, no difference between the two operations above indicated; but it will, I hope, be seen from the following explanation of the methods of work that practically there is a very important difference, for while, in abstracting, the single entry of each minor total may be made to represent several distinct facts, in tabulation these minor totals must be repeated so as to show each fact singly or according to fixed combinations; and the result is that in abstracting few tables are required, in tabulating many.

There is another very important practical difference between the two operations, viz., that while an Abstractor, owing to the continually varying nature of the items which come under his hand, has to be trained somewhat as a Compositor has, the Clerks engaged in tabulation are mere copyists, copying into a given space certain figures taken from a given space in the working registers.

Relative importance of tabulation.

A proposition for which I have always contended is that the preparation of the returns is as difficult and important as the enumeration. I am now prepared to assert that the preparation of the returns is much the more important of the two. In the enumeration the Enumerator can err only in units. In the preparation of the returns, the workers can err in units and tens and hundreds. It has been proved to demonstration in this census that in many ways the errors of the Enumerators balance one another. This was only to be expected. For instance, if the statement of rough totals of the population above given be referred to, it will be seen that the Enumerator's total, when correctly brought out, differs inappreciably from the total as correctly abstracted. Yet the result is the net difference of gains and losses in every block in the country. The Enumerators have not counted up correctly the population of their blocks in 10 per cent. of the number. Yet the net result is practically entirely correct. This is a most important and instructive fact, for, apart from its suggestiveness, it renders it extremely probable that the unsatisfactory nature hitherto of the census returns in India is largely due to the defective way in which they have been worked up. When the officer reviewing the census results comes across some unsatisfactory result, there is, of course, nothing easier than to say that it is due to errors of enumeration. It never seems to occur to him that the root of the evil may be sought nearer home. There is much, no doubt, that is unsatisfactory and capable of improvement in the Enumerator's work, and this fact, which must of course be admitted, is seized on as a cloak for all shortcomings; but it admits of no question in my experience that the work of an Enumerator working under adequate check is, as a rule, more honestly and efficiently performed than that of an Abstractor working under an equally adequate check.

A.—*The method of abstracting the facts stated in the Schedules.*

In his Circular B, dated the 9th November 1880, the Census Commissioner invited the suggestions of the local officers as to the method of abstracting the results which they proposed to follow. From my reply the following are extracts. I have adhered to the principles which I then stated throughout the whole of my working.

Principles of abstracting.

"Before proceeding to describe the working forms, &c., I would note here a few principles, if I may so call them, of abstracting. Abstracting should be a purely mechanical act. The process of abstracting cannot be too methodical. Method and neatness are the two essentials of abstracting as of calculation. The Abstractor should have no discretion. The exercise of discretion requires some mental effort; mental effort of a monotonous nature quickly tires the mind, and the result is error. If any discretion be allowed, there is no consistency. In the extremes no doubt may arise, but on the border line the principle of classification will unconsciously vary from hour to hour. When the particular fact he is put to tabulate comes in one of its forms under the Tabulator's eye, his hand should mechanically seek a given square in the working form. The working form should be as familiar to him as his case is to a printer. In order that this result may be produced, the working form must not vary. It must be printed beforehand. In this way, after a little time, the amount of work turned out will be double or treble what it was at first, or what it would be were the working forms changed continually. The above are not mere theories; they are the results of the experience gained by me in a tabulation made with my own hand, and which it took me about three months, giving nearly two hours a-day to the work, to complete.

"If it be required to abstract any particular from the census schedules, it may be done either directly or indirectly. By directly is meant that the number of persons of whom that particular is true is directly noted, as, for instance, if the schedules be abstracted with a view to ascertaining simply how many persons of a certain caste there are, that caste would be

abstracted directly. If, however, the schedules were abstracted with a view to ascertaining how many persons of that caste were males and females of a certain age, the caste would be abstracted indirectly, or as compared with sex and age. Both methods were adopted here in 1871.

Direct abstracting.

"For the reasons given below, I think direct abstracting a great waste of labor. I do not therefore propose to make any direct abstracting in the Central Office on this occasion. One direct abstracting will be useful to some extent for the purpose of check. This I have provided that the Enumerators shall make. It is the direct abstracting of sex alone, and it is provided for in Rule 27 of the Instructions to Enumerators issued in this Presidency. Under that rule each Enumerator will post on a slip to be attached to the outside of his book the number of males, of females, and of both in the book. The slips will be removed from the books in the Central Office, will be made up into files, and will enable us to arrive at an early knowledge of the total number of the people, and will also be utilized for check as said above.

Indirect abstracting.

"In indirect abstracting certain working forms are necessary. Such forms must vary with the results to be brought out. In using these forms the process is for the Clerk to enter the particulars he is required to extract from the schedules in light strokes thus 𝍸, every fifth entry being drawn across the fourformed strokes and the whole representing the particulars relating to five individuals. This arrangement of the units facilitates the totalling.

Principle on which the working registers were constructed.

"Assuming that the whole number of forms in the Census Committee's Report will be adopted and that, in addition, as I understood from the Census Commissioner, (1) sect in detail and sex, (2) caste, sex and civil condition are to be abstracted, it will be found that we want to know—

(1.) The religion and sex.
(2.) The civil condition and sex.
(3.) The civil condition, sex, and age.
(4.) The religion, sex, and civil condition.
(5.) The religion, sex, and age.
(6.) The birth-place and sex.
(7.) The language and sex.
(8.) The occupation and sex.
(9.) The education and sex.
(10.) The infirmities, sex and age.
(11.) The sects in detail and sex.
(12.) The castes, sex, and civil condition.

"Thus, from the process of abstracting described above, it will be seen that the whole population must be gone over twelve times to get the above particulars unless some method of economizing labor be found; this economy can be effected by making one stroke do duty for more than one particular as in the following diagram:—

Sect.	Sex.	Married.	
Shiva.	Male.	1	
	Female.	1	

"One stroke against male in the above shows—

(1.) That there is one male member of the population.
(2.) That he is a Shiva.
(3.) That he is married.

"In short it gives all the particulars required for the first two heads.

"But there is a limit to this power of combination with safety, and a limit soon reached. The number of spaces which will be found in a register of the above kind is of course the product of the number of horizontal columns into that of the vertical. If these be the same, the spaces increase as the squares of the number of columns. This case shows clearly why the limit is so quickly reached. It seems to me important to realize this law as it gives a standard for estimating the difficulty of picking out the right space, or, in other words, gives a measure of the possibility of error. There is, again, another matter which must be borne in mind, viz., that it is very much more easy to run the eye along a horizontal column than down a vertical one. While, therefore, we may increase to a large extent the number of entries down the side, the number of vertical columns should be very few."

With these remarks I submitted to the Census Commissioner certain forms of working registers, seven in number. These forms I proposed to make large books to avoid the waste of paper and printing. The unit of abstracting was to be the village. Each village, as it was completed, was to be marked off and the strokes relating to it totalled into abstracts from which the minor totals which yield the materials for tabulation were to be obtained. The Census Commissioner, however, did not adopt the exact forms proposed. He modified and improved the combination of particulars in several ways, and he ruled that the unit for abstracting should be the block, that the working forms should be small, a separate form being used for each block, and that the total or abstract should appear on the face of the working form. The latter rulings were of the first importance and probably much facilitated the work. Just before the work of abstracting began here the forms were again largely modified and improved. The working forms finally fixed were seven in number, but by combining Working Register No. II with No. IV, it was possible here to obtain all the required particulars with six. The forms used were, however, essentially the same as those used elsewhere, and were but slightly modified so as to yield the extra particulars required here. The reduction of a working form meant, it will be seen from what has been said above, the saving of going once over the whole population, or from 12 to 15 per cent. of the whole work.

Final shape of the working registers.

The working registers ultimately adopted combined the following particulars :—

No. I. Religion, age, civil condition, sex.
No. II. Religion, civil condition, caste, sect and sex.
No. III. Language, birth-place, sex.
No. IV. Was combined with No. II.
No. V. Occupation and sex, with age for males in towns.
No. VI. Religion, age, education and sex.
No. VII. Infirmities, with age and sex, houses and families.

Of these No. VII was a register combining what may be called miscellaneous particulars. The main duty of the Clerks preparing it was to go over each schedule and strike out distinctly all names which were to be removed. The indistinct removal of names was at first a very fertile source of error in abstracting. The proper striking out of the entries is a matter to which attention should be directed in any future census. It should be very distinctly laid down that the entry in *every* column relating to an individual to be struck out should be scored through, not that the name* only should be struck out as in the present census. The seventh register alone did not embrace all the population of the block. In the other five registers a stroke for every person entered in the schedule had to be made.

* *Vide* Rule 21 of the Instructions to Enumerators, Paper No. III.

In the working of registers such as I have indicated above, it is obviously very easy to make mistakes. I shall now, therefore, explain how such mistakes were discovered and how they were rectified. In order to make these points and my subsequent remarks clear, the constitution of an abstracting office must be briefly stated.

Constitution of an abstracting office.

It consisted of—

1. A Record Department.
2. An Abstracting Department.
3. A Checking Department.
4. A Testing Department.

The Record Department calls for no special remark. Owing to the packing rules it was worked in an office of 600 men by 3 Clerks and 4 Attenders, though the number of the circle and block had to be marked on every book of schedules, and though the bundles were excessively bulky and unwieldy. In any future census the marking of the circle and block number as above should be done in the districts and at the time of packing the books.

In the Abstracting Department were seven sections corresponding to the seven working registers. The duty of the abstractors was simply to go over all the entries in each block and to mark a stroke in the appropriate space of his working register. Having thus gone over the whole block he totalled in figures in the appropriate place all the strokes in each space. In the management of this department two principles were kept in view—

First.—That the working registers which a Clerk was put to work should be changed as seldom as possible, for it was early apparent that this at once affected most injuriously the quality and quantity of his work.

Second.—That the schedules dealt with on one day in one section should be worked up the next day in another, so that the whole abstracting work should be done in regard to each circle with as little delay as possible.

Of the working registers some were very easy to work, some more difficult. The strength of the sections, therefore, varied very much. Thus the sections working with Working Registers Nos. I and VI were from two to three times as strong as those working with No. III.

The Checking Department was not less than 10 per cent. of the strength of the office. It was divided into sections, reworking, in the same way as Abstractors had already done, the particulars of caste, sect, civil condition, birth-place, language, occupation and education for not less than 10 per cent. of the whole abstracting work. There were special working registers for checking birth-place, language and education, framed with a view to save time and labor. The results brought out by the Abstractors and Checkers, which should, of course, agree exactly, were compared and the Abstractor found in error was severely punished. The whole of Working Register No. VII for many districts was worked twice over until agreement was secured, and in no case was less than 25 per cent. of the work done.

The Testing Department was the most important in the office. It was the most highly-paid and consisted of picked men. The duty of a Testing Clerk was correction and elimination of error. He compared the five different abstractings of the same particulars in the five working registers, and corrected the registers by a reference to the schedules, or had them abstracted afresh according to distinct rules. The Testing Clerk could himself correct only when two items of age or two of civil condition differed. If more differed he noted in a form simply that the age periods specified were wrong and returned the registers with the schedules to the Abstracting Department, where the age periods or civil condition marked as wrong were reworked on the back of the register. In correction of age the particulars of civil condition and education were both noted. When more than four age periods differed, or more than four items of civil condition differed, and in all cases where sex or totals differed, the schedules were returned to the Abstracting Department with a written order to abstract them afresh. The Testing Clerks were not allowed to communicate with any one in the abstracting sections except the Supervisors, nor were they, as a rule, allowed into the abstracting sections. Any Testing Clerk found in direct communication with any Abstractor rendered himself liable to the penalty for fudging.

The Testing Department was the only department of the office in which fudging was possible and likely to occur. When I first opened the department I determined to trust to the good faith of the men, as they had been picked and were the best paid men in the office, and I placed them only under ordinary supervision; but no sooner did the men realise the position after about a week or ten days working than fudging became rampant. I at once placed the department under the strictest and most trustworthy supervision, so much so, that while a Supervisor had ordinarily about 30 men to look after, in the Testing Department he had but 12. The Supervisor had carefully to examine not less than 60 per cent. of the work of each of his men and to bring to the notice of the Assistant every suspicious entry or correction. With a view to further testing the correction work a large number of the Testing Clerk's corrections which involved abstracting were reworked by Abstractors under the direct orders of the Assistant in charge of the office, who chose daily at haphazard the work of the men to be examined. The whole day's work was thus tested. It was also made a rule of the department and a condition of service in it, that any Testing Clerk found fudging would be summarily dismissed, with the loss of all pay due to him on the date of dismissal, usually from 25 to 30 rupees, and the penalty was invariably exacted.

As fudging was easy to find out from the work accounts or from an inspection of the working as, if persisted in, it was certain to be found out within a day or two, since particular attention was paid to this department both by myself and my Assistants, and as every person caught was at once removed from the office, the practice very quickly ceased. Whenever, at any subsequent stage of the work, a register has been found fudged, it has been reworked, and I believe almost every instance has been thus corrected.

Method of eliminating error and system of check maintained.

I shall revert now to the account of the method of eliminating error and of the system of check maintained in regard to the working of the several registers.

Meaning of correct abstracting defined.

By accurate or correct abstracting, I understand an abstracting of the schedules which reproduces, of course in the required form, exactly the statement of the Enumerator in regard to each person entered in the schedules. In regard to the entries in any given number of schedules, it is clear that but one statement of any particular, as age for example, can be correct.

Nature of the check of a double abstracting and cases where it applies.

It must be correct in the above sense of the term or it must not; which it is, can only be ascertained by doing the work over again. If the work be done over again quite independently and the same result exactly be arrived at, it is very strong evidence that the result is correct. This inference, however, cannot be drawn unless the second worker is ignorant of the result brought out by the first, or unless, if he be aware of it, he be an entirely trustworthy person who can resist a very strong and *continually* recurring temptation. If, again, two men work any particular from the dictation of a common reader and agree in the result, it proves no more than that they both correctly followed the reader's words. The agreement in the latter case affords no ground for inferring that the abstracting is correct in the true sense of the word.

Common particulars in the working registers.

Now it will be seen from the particulars worked in each working register given above on p. 111, that the total population and sex is common to all five registers; that religion is common to three; age and civil condition to two. These particulars are comprised in Working Registers Nos. I, II and

VI. If, then, the abstracting of Working Registers Nos. I, II and VI be kept entirely independent in the sense in which I have above used the term, the working of any particular (say age) in one can be used to check that of the like particular in another.

There are many methods in which abstracting work may be done. I am at present concerned with but two. In one the required particulars may be read out by one man and posted in all or some of the appropriate working registers by Abstractors charged each with one or more working registers. In the other each Abstractor reads and works for himself. The first method has been called the dictating system, the second the silent system. Both were tried here, and the impression left on my mind was that under no circumstances could the dictating system compete with the silent either in the amount or quality of the work turned out after the men were trained. The method ordered by the Census Commissioner was to have Working Registers Nos. I, II and VI filled up simultaneously on the dictating system, the other registers on the silent system; but this union of the working of the registers containing common particulars was never permitted here, nor was the powerful check of a double tabulation ever abandoned in regard to the particulars of sex, religion, age or civil condition even for a single register.

Method in which abstracting work may be done.

Thus it will be seen that since the results for total population and sex are the agreement of five workings, those for religion of three, those for age of two, and for civil condition of two, while the particulars of caste, sect, birth-place, language, occupation and education have only been once worked, in the reliability of the results in so far as it depends on tabulation there are two degrees—

Degrees of reliability in the returns.

First.—In regard to the total population, sex, religion, age and civil condition, we may be morally certain that the abstracting represents exactly the returns made by the Enumerators.

Second.—In regard to caste, sect, birth-place, language, occupation and education there is error. It is of importance to determine to what extent.

In the first case all error was eliminated; in the second our efforts were directed to keeping the amount of error which was committed in the single working as low as possible.

Now the truth of the assertion first above made in regard to sex, religion, age and civil condition depends, it will be seen from what I have already said, on its being shown that the workings of the several particulars mentioned were kept absolutely independent and that there were no causes of error which could affect the result outside the abstracting itself.

In regard to the particulars placed in the second category, check could only be operative through punishment or hope of reward. In order to bring to bear either of these incentives to correct work it was necessary to see whether the work was right or wrong. This could only be done by doing the work over again. It was not permitted to rework the whole work again, but not less than 10 per cent. of the work was daily reworked, so that no Abstractor could know when or what portion of his work would be checked and a severe punishment was inflicted for every error found. To a number of men equal to one-sixth of the strength of each section, whose work was found best in quantity and quality, a reward of 5 rupees each was given at the end of each month.

I shall now therefore explain—

First.—How the absolute independence of the working of the different registers was attained.

Second.—I shall set out what causes of error outside the abstracting came to my notice and to what extent they were operative.

Third.—I shall show how check was made operative generally, and more especially in regard to the particulars of caste, sect, birth-place, language, occupation and education.

Fourth.—I shall estimate the amount of error in the statements of the latter particulars due to abstracting.

The first object was attained naturally and easily from the method in which work had to be done. The day's work of a section of any of the offices was never less than from 150 to 200 blocks or from 10 to 20 circles. As each circle was finished in one section it was sent on to that division of the next appointed section which wanted work. When required there it was placed on a table and each Abstractor who required work was compelled to take that book of schedules which happened to be uppermost in the bundle. Thus no one could tell beforehand into what particular division of a section any particular circle would have to go or who would have to work any particular block when it got there. The slip showing the population of the block, or any paper showing the information, was removed before the block book was sent into the Abstracting Department. No note or writing of any kind was allowed to be made on the schedules, except by the Supervisors under the orders of the Assistant, nor was an Abstractor allowed to keep any record, &c. of the schedules worked by him, or of the results of his working. He noted in his diary merely the number of strokes which he made on a given date. The results brought out for a block could only be ascertained from the working registers, which were removed twice each day from the sections and placed in the charge of another department. As each section consisted of from 60 to 70 Abstractors—most of them complete strangers to

Independence of working the different registers how attained.

one another—it was almost an impossibility for any Clerk to find out that particular Clerk who worked the block in which he was interested in each of the other four sections. The difficulty was still further increased by the division of the blocks into parts. As a further precaution the records were so passed through the sections that those registers which contained common particulars as age, &c., were not abstracted on successive days, and the sections in which they were worked were so located in the buildings that no communication between them was possible.

Three causes of error outside abstracting.

The causes of error which I noticed outside the abstracting itself were three. I mention them only in order that they may in future be prevented. One was that in the case of some few schedules in all districts, but especially in South Arcot and Coimbatore, the red ink used by the Enumerators was so bad that it had faded out. In all but one or two of these cases, however, it was possible to make out the entries with patience and care, and I mention the fact more with the view of calling attention to the false economy of which it is the outcome than because any error worth mentioning resulted. The value of the time of the men expended in deciphering these entries would probably have covered many times over the cost of supplying proper ink.

The second cause was the destruction of schedules in the process of handling during abstracting. The books were received from many districts very badly stitched. Owing to the size of the schedules, and the large blocks adopted in the Presidency, the books were of great weight, and consequently the outside schedules got much worn. Much care and labor had to be expended in mending them, and the books of one district, Ganjam, which for all the Ooriya sections and part of the Telugu portions of this district consisted of very inferior paper and were extremely badly prepared, had to be entirely restitched; but notwithstanding all precautions it cannot be doubted that in some instances the schedules were completely lost and the amount of difference due to this cause in Ganjam is appreciable. In any future census proper attention should be given to the preparation of the schedule books. The way in which they were received from some districts, *e.g.*, Chingleput, shows that there need be no real difficulty in the matter. It would probably ensure better results were the materials, as covers, &c., sent out ready for stitching from Madras. I give below a statement showing the number of cases in which schedules were lost, and the differences between the tabulation and the rough totals in the blocks where this occurred. The amount of trouble and delay which resulted from this cause in the office was very considerable.

Statement showing the Number of Cases in which Schedules were destroyed, and the difference between the tabulation and rough totals in such blocks.

District.	Number of lost Schedules.	Population involved in the Schedules lost.			Remarks.
		Males.	Females.	Both Sexes.	
1. Ganjam	762	2,415	2,164	4,579	
2. Vizagapatam	53	145	107	252	
3. Godávari	37	172	137	309	
4. Kistna	77	445	220	665	
5. Nellore	8	51	40	91	
6. Cuddapah	..	..	..	..	
7. Kurnool	..	..	..	..	
8. Bellary	..	..	..	..	
9. Chingleput	11	47	55	102	
10. North Arcot	3	44	65	109	
11. South Arcot	25	139	103	242	
12. Tanjore	.	..	..	..	
13. Trichinopoly	26	168	107	275	
14. Madura	38	166	138	304	
15. Tinnevelly	..	..	..	..	
16. Salem	..	..	..	..	
17. Coimbatore	62	241	203	444	
18. Nilgiris	3	5	6	11	
19. Malabar	* 51	..	..	219	* Of these, 35 schedules containing a population of 105 names were eaten by cows in the night-time.
20. South Canara	..	..	..	..	
21. Madras City	26	153	193	346	
Total ..	1,182	4,191	3,538	7,729	
Pudukóta Territory	..	..	..	219	
				7,948	
Agency Tracts specially censused. Ganjam	..	..	..	..	
Vizagapatam ..	..	..	..	..	
Godávari	..	..	..	..	
Grand Total ..	1,182	4,191	3,538	7,729	
				219	
				7,948	

With regard to the above statement, it must be observed that it cannot be assumed that the particulars of all the persons contained in the schedules mentioned in the first column have not

been brought to account. In many instances they have been so, as the schedules were destroyed after the tabulation was completed, and the difference arises from erroneous counting or mistakes by the Enumerators as in numberless other instances.

The third cause from which error has arisen is, generally stated, the omission of blocks from abstracting and tabulation. Much care was needed and taken to prevent this and but one case has come to notice. The Jail block in Cuddalore in South Arcot has not been worked, and the error has been discovered too late to be remedied.

How carefulness in working enforced.

Carefulness in working generally, and in regard to the particulars of caste, sect, birth-place, language, occupation and education in particular, could be ensured ultimately only by punishment for error. How this check was worked will be best explained by following the working registers from the time they left the Abstracting Department until they were finally passed for compilation.

As the abstracting of the registers was completed in each section they were sent to the miscellaneous section of the Testing Department, where they were arranged and the five registers relating to each block were brought together. The totals and sex as appearing in each of the five registers were then compared, and if three or more of the five abstractings agreed, this agreement was held to show the figures entered in the agreeing registers to be correct, and the names of those Abstractors whose working was wrong were entered in a list known as the "Punishment List." This list, which was checked by the Superintendents, was duly submitted to the Assistant, and a fine, fixed at a rate uniform for the whole office or section and varied from time to time with the quality of the work turned out, was imposed for every register found incorrect, the fines imposed being daily communicated to the persons in fault. The five registers were then sent to a checking Supervisor. Meanwhile the schedules had been sent to the Checking Department, where the registers for the purpose of checking the circle were prepared. From this latter department the registers were also sent to the checking Supervisor, whose duty it was in those cases where sex and totals agreed to compare the details of the two workings and note all differences. This he did in a register and then sent for the Abstractor and pointed out the differences to him. If he wished to challenge the checker's work he was allowed to do so in the presence of the checker, and the two were jointly required to certify, after reference to the schedules, who was wrong. If the Abstractor was wrong, his name was entered in a second column of the Punishment List and a fine at a rate similarly fixed as in the case of totals, but very much higher, was imposed. The checker, if wrong, was also punished by fine, but at a much lower rate. The Punishment Lists were daily tabulated and abstracted by the Superintendents and Supervisors of the office, and the total fine on each man ascertained and reported to the Head Office, where it was registered and recovered at the time of the preparation of the pay bill. The working registers finally passed into the Testing Department, where those registers which were found to differ in totals, sex, religion, age or civil condition were corrected or superseded and reworked as the case demanded. During the latter part of the work, with a view to bringing a check similar to that imposed on the working of sex and totals to bear on the working of religion and age, &c., the superseded registers were daily collected, each testing Clerk being required to account for the registers made over to him, and from the registers superseded for errors in religion, age or civil condition a punishment list was prepared and a fine imposed.

Statement of error in the abstracting work.

From the registers kept by the checking Supervisors as above mentioned the following statement, from which the amount of error in each particular can be estimated, has been prepared :—

No.	———	Working Register No. II and IV containing the abstracting of Caste and Sect.	Working Register No. V containing the abstracting of Occupation.	Working Register No. III containing the abstracting of Birth-place and Language.	Working Register No. VI containing the abstracting of Education.
1	Total number of cases analyzed or examined ...	3,279	1,828	5,491	3,156
2	Of 1 do. where original abstracting was right.	2,161	1,215	4,660	2,455
3	Of 1 do. where original abstracting was wrong.	1,118	613	831	701
4	Of 3 do. where population was not noted. Males ...	260	106	205	144
	Females ...	274	114	243	509
5	Of 3 do. where population was noted. Males ...	858	507	626	557
	Females ...	844	499	588	192
6	In 5 total population involved in stated cases. Males ...	76,677	45,309	58,020	52,449
	Females ...	77,258	45,678	56,846	21,040
7	Of 6 population affected by error ... Males ...	42,464	25,518	58,020	52,449
	Females ...	42,505	36,740	56,846	21,040
8	Of 7 population misplaced ... ... Males ...	8,940	4,840	10,356	4,190
	Females ...	9,322	4,402	10,654	1,430

Before proceeding to consider this statement it is necessary to note that it does not include the particulars of all the cases checked. As all the requisite information had not been noted or was not in a form in which it could be used, many cases have had to be rejected. It must be remembered that these registers were kept by men who had but a very indistinct notion why the information was wanted, and that the registers were kept merely as a subsidiary part of their work. The number of cases available is, however, sufficiently large to afford a very reliable ground of inference, and they are spread over the whole or a large portion of the work.

Method of keeping the registers.

It is also necessary to point out the meaning of the eighth item in the statement. Since the total number of persons in a block is otherwise known, if a person be misplaced under a wrong head of fact, it involves an error in the head to which he is erroneously added, and also an error in that from which he is erroneously taken away. The number of persons misplaced is that given in the statement, and hence it is double the number erroneously added, or double the number erroneously taken away. Thus denoting the number of persons misplaced by E, positive error on the whole or the whole number of persons erroneously added will be $\frac{E}{2}$, and the amount of negative error or the number of persons erroneously taken away will be the same.

Meaning of population misplaced.

Turning now to the statement and taking up first the consideration of Working Register No. II and IV which relates to caste and sect, between which for the present purpose there is no difference, it will be seen that of all the registers worked $\frac{2161}{3279}$ths were quite correctly abstracted. I frequently experimented and found that the population included in any considerable number of registers taken at haphazard varied hardly at all. We may assert, therefore, that registers containing the abstracting work relating to 9,838,070 males out of 14,927,824, and relating to 10,077,372 females out of 15,290,932 were quite correctly worked, leaving a population of 5,089,754 males and 5,213,560 females contained in registers, in the abstracting of which there was error. Of the population contained in registers in which there was error $\frac{42464}{76677}$ths for males and $\frac{42505}{77258}$ths for females were alone affected by the error, or a population of 2,818,724 males and 2,868,342 females were affected in some measure by error. We know that the measure of that error was for males 8,940 individuals misplaced out of 42,464, and for females 9,322 out of 42,505. Hence in the whole population the number of males misplaced was 593,430 and of females 629,057.

Error of misplacement in W. R. No. II and IV.

Now a careful analysis of the errors in each caste shows the law of error to be—

Law of the error.

1*st.*—That the number of persons erroneously added to a caste was balanced by those erroneously taken away.

2*nd.*—That castes lose or gain in proportion to the number of times which they occur in abstracting.

Castes are not found scattered. As a rule there are but few caste names met with in a block. The second law may be stated to be that castes lose and gain in proportion to the total number in a caste. This is equivalent to asserting that there is an equal probability of error in the making of each stroke in abstracting and is the law which should prevail on the assumption that the abstractor errs unconsciously. For the case may be illustrated by that of a man trying his utmost to drop from a fixed height a marble into series of holes in a box. Into the first hole he drops one; into the second two, and so on. The second law asserts that if he fails once in 100 attempts he will fail twice in 200, and the first that one of the marbles which goes astray in the dropping of 200 will find its way into the 201st hole, while one of these going astray in dropping into the 201st hole will go into the 200th. The marble must always go into some hole.

Hence if E be the total number of persons misplaced, Q be the whole population, since positive and negative error cannot co-exist in each observation, if we suppose each observation affected by error, its amount will be $\frac{E}{2}\cdot\frac{1}{Q}$, and if N be the number in any caste, the greatest number of persons we may expect to have been erroneously added to or taken away from a caste is $\frac{E}{2}\cdot\frac{N}{Q}$; or taking numbers we find that the greatest number of times we may expect an individual to be wrongly placed in a caste shown as 100 in the returns is for males 1·99 and for females 2·05. Assuming, however, an initial probability $\frac{E}{2}\cdot\frac{1}{Q}$ that a positive error will occur, then it is an even chance that in a hundred trials the number of times that positive error will occur will be but ·4367 for males and ·5578 for females. The meaning of the above is not that a caste which is shown in the returns as containing 100 individuals will err from the true number of individuals by 1·99 for males and 2·05 for females, but that the utmost we may expect is that two individuals (say) Chinnasami and Ramasami, whose caste was A in the schedules, have been abstracted as belonging to caste B. It follows, however, at once from the first law of the error which I have stated that two other individuals (say) Venkata and Rama, whose caste was B, have been abstracted as belonging to A. An error of this kind is however utterly immaterial for the purpose of the return, and it

Limits of the error.

is the most probable result that the number as shown in the return for the caste represents exactly its true numbers. Assuming that each observation of a caste of 100 is affected, with an error $\frac{E}{2}\cdot\frac{1}{Q}$ in amount, where, as in this case, positive and negative errors are equally likely and the average of all the observations is correct, the limits within which it is an even chance that the sum of 100 observations shall depart from 100 times the average of all the observations is for males $\pm$ ·1326 and for females $\pm$ ·1388, or it is an even chance that the true number in a caste shown in the returns as 5,686 males should be 5,685 or 5,687 males and in a caste shown as 5,100 females that the true number should be 5,189 or 5,191 females; or speaking roundly we may say that the error in the returns in regard to caste and sect is probably 1 in 5,700 for males and 1 in 5,200 for females. The latter then is the measure of the confidence with which we may regard these returns in so far as it depends on the abstracting work.

Error of misplacement in W. R. No. V.

Turning now to the consideration of the tabulation of Working Register No. V, it is necessary to note that the group head occupies in the tabulation of occupation the position that caste or sect does in the abstracting of Working Register No. II and IV which has just been considered. Following the same method as before, from the facts given in the statement printed on page 115, we arrive at the result that the number of persons misplaced was 534,739 for males and 494,153 for females.

Limits of the error.

Analysis of the registers shows that the law of error in the abstracting of this particular is identically the same as that of caste. Making the same assumptions and calculating in the same manner as already given for caste, the result is that it is an even chance that a group head of 100 males does not differ from the truth by more than $\pm$ ·1205, or it is an even chance that a group head shown in the returns as consisting of 6,891 persons should be 6,890 or 6,892. Similarly it is an even chance that a group head of 100 females does not differ from the truth by more than $\pm$ ·1082, or it is an even chance that a group head shown as consisting of 8,545 individuals should be 8,544 or 8,546. The error of these returns therefore, in so far as it depends on tabulation, may be said to be 1 in 6,891 for males and 1 in 8,545 for females.

In regard to both these cases it should be borne in mind that the limits of the error vary, not as the number, but as the square root of the number in the caste or group head.

It will be seen that though the law of error is the same in the caste and occupation statements, yet the reliability of the abstracting of females in the occupation returns relatively to that of males is much greater than in the case of caste. The result is instructive and the reason a simple one. It is that the caste of females is just as diversified as that of males, while their occupations are much fewer and therefore easier to abstract.

Error of misplacement in W. R. No. VI.

Turning next to the particulars of education as abstracted in Working Register No. VI and omitting arithmetical details, we find that the number of persons misplaced is 264,883 males and 230,836 females. An analysis of the registers in this case shows the law of error to be as stated in columns 3 and 4 of the annexed statement. Distributing the total numbers misplaced proportionally to the numbers in columns 3 and 4, we obtain the result given in columns 7 and 8 :—

Particular.	Gain or Loss.	Law of Error as in the noted cases.		As applied to the whole results.		Nett results.	
		Males.	Females.	Males.	Females.	Males.	Females.
1	2	3	4	5	6	7	8
1. Under instruction ...	Gains	111·54	34·46	7,051	5,562	...	...
	Loses	484·53	264·18	30,631	42,645	23,580	37,083
2. Instructed	Gains	352·07	46·94	22,257	7,416	...	...
	Loses	1000·44	83·27	63,246	13,442	40,991	6,026
3. Illiterate	Gains	1617·45	628·86	102,252	101,513	77,791	88,071
	Loses	386·93	83·27	24,461	13,442	...	...
4. Not stated	Gains	13·94	5·74	881	927	...	..
	Loses	223·10	284·28	14,104	45,889	13,223	44,962
	Total Misplaced ...	4190	1430	264,883	230,836	...	...

Amount of error.

The above is but an estimate, but from it we learn that it is probable that in the final returns the number of persons shown as under instruction is by an error of abstracting under stated by 60,663 persons and the number instructed by 47,017, while the illiterate are shown too many by 165,862. Distributing the two former numbers over all districts proportionably to the numbers shown in each in Final Census Table No. XIII we obtain the following correction :—

Districts	Males.						Females.					
	Under Instruction			Instructed.			Under Instruction			Instructed.		
	As per the Census Table No. XIII.	Correction to be added	Total.	As per the Census Table No XIII	Correction to be added.	Total.	As per the Census Table No XIII.	Correction to be added.	Total	As per the Census Table No. XIII	Correction to be added	Total.
1. Ganjam	14,779	670	15,449	42,359	1,131	43,490	764	724	1,488	3,504	223	3,727
2. Vizagapatam	13,816	627	14,443	40,547	1,082	41,629	869	824	1,693	3,093	197	3,290
3. Godávari	22,739	1,032	23,771	49,451	1,320	50,771	1,554	1,474	3,028	2,292	146	2,438
4. Kistna	19,161	869	20,030	58,365	1,559	59,924	1,262	1,197	2,459	2,378	152	2,530
5 Nellore	13,048	592	13,640	52,382	1,398	53,780	810	768	1,578	2,681	171	2,852
6. Cuddapah	10,590	480	11,070	39,221	1,047	40,268	386	366	752	1,496	95	1,591
7. Kurnool	6,687	303	6,990	26,094	697	26,791	411	390	801	1,401	89	1,490
8 Bellary	17,930	813	18,743	57,556	1,536	59,092	707	670	1,377	2,252	143	2,395
9 Chingleput	26,693	1,211	27,904	69,271	1,849	71,120	1,606	1,523	3,129	3,526	225	3,751
10 North Arcot	34,994	1,588	36,582	92,221	2,462	94,683	1,451	1,376	2,827	3,861	246	4,107
11. South Arcot	32,859	1,491	34,350	106,004	2,830	108,834	1,111	1,054	2,165	4,370	278	4,648
12. Tanjore	57,623	2,614	60,237	174,313	4,653	178,966	1,812	1,718	3,530	5,379	343	5,722
13 Trichinopoly	23,674	1,074	24,748	73,977	1,975	75,952	1,182	1,121	2,303	3,251	207	3,458
14. Madura	41,263	1,872	43,135	134,091	3,579	137,670	1,617	1,533	3,150	4,561	291	4,852
15. Tinnevelly	46,515	2,110	48,625	135,271	3,611	138,882	5,085	4,822	9,907	8,014	511	8,525
16. Salem	18,032	818	18,850	50,349	1,344	51,693	1,091	1,035	2,126	2,857	182	3,039
17. Coimbatore	21,640	982	22,622	61,562	1,643	63,205	1,657	1,571	3,228	5,050	322	5,372
18. Nilgiris	1,352	61	1,413	4,775	127	4,902	413	392	805	1,000	64	1,064
19 Malabar	59,264	2,688	61,952	147,167	3,929	151,096	9,550	9,056	18,606	20,009	1,275	21,284
20. South Canara	10,870	493	11,363	38,785	1,035	39,820	880	835	1,715	2,451	156	2,607
21 Madras City	21,318	967	22,285	61,093	1,631	62,724	4,800	4,552	9,352	10,585	674	11,259
Total .	514,847	23,355	538,202	1,514,854	40,438	1,555,292	39,018	37,001	76,019	94,011	5,990	100,001
Pudukóta Territory	4,951	225	5,176	20,729	553	21,282	86	82	168	558	36	594
Total, including Pudukóta Territory	519,798	23,580	543,378	1,535,583	40,991	1,576,574	39,104	37,083	76,187	94,569	6,026	100,595

Little reliability which can be placed on the results of a single working.

The reflection suggested by this statement is the impossibility of estimating *á priori* the amount of error in a single abstracting, and hence the little reliance which can be placed on its results. I should certainly not have anticipated that by an error of abstracting the number of females would be understated by 50 per cent., yet such is the result. Nothing but an independent double-working can render it certain that the results of abstracting will represent the facts as stated by the Enumerators.

Error of misplacement in W. R. No. III.

Taking up lastly the consideration of Working Register No. III, which contains the abstracting of both birth-place and mother-tongue, we find that the number of persons misplaced is males 403,236 and females 433,706. This is the total misplacement in the register, and consists of that relating to birth-place alone, to mother-tongue alone, and to both jointly. Separating these cases, the entire misplacement for birth-place alone was 266,977 males and 308,918 females, and for mother-tongue alone males 261,438 and females 272,869.

The law of the error is in this case as shown in the annexed statement :—

		Birth-place.		Mother-tongue.	
		Males.	Females.	Males.	Females.
Block and language of the block under abstracting.	Gains ...	381	425	276	264
	Loses ...	128	133	112	110
Other items	Gain ...	101	132	196	228
	Lose ...	354	424	360	382
	Total ...	964	1,114	944	984

Amount of error.

Hence we may deduce the total misplacement and error to be as follows :—

		Mother-tongue.				Birth-place.			
		Misplacement.		Error.		Misplacement.		Error.	
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Block and language of the block under abstracting.	Gains ...	76,437	73,208·7	45,419	42,705	105,516·8	117,855	70,067·6	80,973
	Loses ...	31,018	30,503·7	...	...	35,449·2	36,882	...	...
Other items	Gain ...	54,282	63,226	...	...	27,971·7	36,604	...	...
	Lose ...	99,701	105,931	45,419	42,705	98,039·3	117,577	70,067·6	80,973
	Total ...	261,438	272,869	...	...	266,977	308,918	...	...

There are no data for determining how the loss is distributed over the other items. The result above given tells us that taking each district separately the number shown as born within the district and speaking the language of the district is overstated by 151,041 and 88,124 persons respectively.

General law of the error.

An examination of the law of error running through all the above cases shows it to be the same in all, though its results are very different. It is that an abstractor will unconsciously add to that item which occurs oftenest in the block he may be working. Where, then, as in education the number of the illiterate largely exceeds *in every block worked* that head will gain on the whole. This law indicates at once those items which should be worked under a double abstracting.

In writing as above, I must not be understood as admitting that the abstracting work here was in any way worse than that in any other Province. On the contrary, it is probably better, for the check on the working of every particular worked here in a single working was the same and as efficient as in any other Province, while the check of the double-working was wanting in the case of most other Provinces. The above estimate of the error has become possible, because in this Province an attempt has been made to measure error where it was early clear it must exist.

Strength of the office.

In the above paragraphs I have endeavoured to give the method in which error was found out and eliminated. From the following statements marked A and B the number of men employed and the amount of work done can be gathered :—

A.—Statement showing the Daily Average Strength of the Abstracting Offices.

Month and Year.	Daily Average Strength of the Office.	Daily Average Number of Officers of and above the Grade of Supervisors.	Daily Average Number of Testing Clerks.	Daily Average Number of Abstracting Clerks.	Daily Average Number of Record-keepers and Assistants.	Daily Average Number of Miscellaneous Clerks.	Daily Average Number of Absentees.
March 1881 ...	77	..		77	..	..	2
April „ .	284	11		254	1	18	8
May „	672	28	23	610	2	9	24
June „ ..	765	32	76	652	3	2	32
July „ .	811	31	118	651	.	*11	36
August „ ...	1,114	60	205	837	.	*12	53
September „ .	1,456	67	219	1,158	5	7	87
October „	1,434	73	243	1,108	10	...	94
November „ .	1,332	75	242	1,004	9	2	94
December „ ..	1,173	74	223	865	8	3	83
January 1882	612	42	136	428	6	5	52
February „	37	3		27	2	5	3

B.—Statement showing the Amount of Work done in the Abstracting Offices.

Month and Year.	Number of Days worked.	Total Number of Abstracting Clerks.	Number of Names abstracted.	Average Number of Names per Man per Day.	Average Number of Strokes per Man per Day.
April 1881	12	5,165	1,337,594	259	1,295
May „	24	12,684	2,546,954	201	1,005
June „	25	14,432	2,700,691	187	935
July „	26	14,409	4,138,738	287	1,435
August „	26	17,170	6,811,853	397	1,985
September „	25	22,040	9,213,833	418	2,090
October „	24	20,626	9,345,674	453	2,265
November „	26	20,827	9,387,985	451	2,255
December „	25	17,652	7,246,616	410	2,050
1st to 15th January 1882 ...	11	4,846	1,872,647	386	1,930

Incorrectness of Abstractor's work.

The population of the Presidency, for which regular abstracting was made, is only 30,218,756; yet the names abstracted were 54,602,585. This statement therefore suggests that there must have been an immense amount of error in the Abstractor's work; yet in the estimates of the duration of the work it was assumed (and the assumption was a deduction from the experience of 1871) that it would all be correct. So far from this being so, experience showed me that for a period from a month to two months after he was entertained in the office the work of an Abstractor was almost entirely rejected.

Another thought which presents itself is the vast amount of labor which must have been done. Not less than 273,012,925 strokes can have been made, or to put it in another way, it would have taken 149,851 men one day to do it. The above return does not include the work of the Checking Department. It further appears that to obtain correct results as to sex, religion, age, and civil condition, 80 per cent. of the population had to be reworked. In the above facts must be found the explanation of the delay in obtaining the results of the Census.

Work accounts of the office.

The above statement has been prepared from the work accounts of the office. Each man employed had to keep a diary of the work done by him. In the Abstracting Department in this diary the Abstractor merely entered the total number of strokes made by him and the date. As he completed each register he entered in his diary the total number of persons or strokes in the register. When he delivered the register to the Supervisor of the section the latter had to initial the entry in the diary and also the working registers. In the evening the Supervisor collected all the diaries and posted up the work done in his section. These returns were collected by the Superintendents, who embodied them in a general progress report which exhibited the day's work of the office in all its departments, and which was submitted to me on the day following that to which it related. By means of the Supervisors' returns and the general progress reports, the work of every man in the office was kept constantly under scrutiny and each day any idleness was checked. With a view to checking any false return, and also to keep a register of the working registers received from

* Includes Recordkeepers and Assistants.

the Abstracting Sections which was found very useful, the total of each register was posted in the Miscellaneous Department, and each day the work returns were checked by these registers.

On these returns an average rate of work for each day was fixed. This varied in every working register, but the average outturn was fixed by the Census Commissioner at 400 names equivalent to 2,000 strokes a man per diem. In some offices here the average attained to over 500 names. It is not difficult to bring on an Abstracting Office to yield a large number of names, but there comes early in the process a time when to do so means only waste of work. In the beginning, a low rate of work must be taken, which may be considerably increased as time goes on; but I think that the average rate of work should be from 300 to 350 names, and that the average outturn of an office should never be allowed to exceed 400 names. It is a mistake to fix formally a maximum or a minimum of work. The average of the section should be the guide, and this of course is not fixed. In fixing the rates of fine with reference to work, allowance should be made for difficulties in the work as for badly-written schedules or other like causes. How this can affect the question will be apparent when I say that owing to the fact that the schedules were translated and excessively badly written, it took twice as long to abstract the schedules of the Ganjam District as of any other. Referring to the statement it will be seen that in the month of June the rate of work was slowest, yet it was the work done then which was the best, which passed most rapidly through the office, and which gave least trouble at any later stage. The rate of progress towards completion of the work was then it is probable really greatest. At that time of every 100 sets of five registers worked, 25 sets were correct in every respect. At the end of July, under the orders of the Census Commissioner, the offices were swamped by an enormous extension, and the rate of work was forced up. After this, for several months, not a single set of registers came right, and of the single registers worked as much as 50 per cent. were wrong in sex and totals. After about two months, and after a careful weeding of the offices by dismissal, with the usual consequences of anonymous threats, suits, appeals, and annoyance of every kind, the rate improved; but at any subsequent period the highest percentage reached was 10 per cent. of the sets of working registers correct and of the single registers 80 per cent. correct. On an average of the last four months working of the offices I would place this percentage of single registers worked correctly in regard to sex and totals at not more than 65 per cent. of those worked. The state of things was really this that the good workers in the office who were all picked for reabstracting were engaged in correcting and reworking the work of the bad workers. The truth is that correct abstracting on a large scale needs picked men with a special aptitude for the work and trained to it. It cannot be done rapidly and in large quantity by any one, as assumed in the argument on which the employment of large offices rests.

Average of work done per man.

The bad results to which I have adverted were also due to the great inferiority of the men actually employed. Among the men sent from the districts when the extension of the offices abovementioned was ordered were many Press Attenders, Golas, Gumastas of village shopkeepers and even Tahsildars' cooks; but that the men should be inferior was to a large extent due to the low pay necessarily given.

What I desire to emphasize in the last few paragraphs is that it is a great mistake to require the maximum rate of work attainable, and perhaps a greater to suppose that abstracting work can be done profitably by men of an inferior stamp.

Intimately connected in practice with this question is that of the method of payment and the amount of pay to be earned.

Method of payment and amount of pay to be earned.

In regard to the former, experience leads me to the conclusion that the only possible method with enormous offices is a system based on payment by results. I tried to introduce this in its naked form at first. A maximum and a minimum of work were fixed. Those working correctly up to the maximum were to receive 20 rupees a month, those working up to the minimum 15 rupees a month, and below the minimum a deduction proportional to the deficiency was to be made. But this system, which was that of 1871, had to be abandoned, as the men did almost no correct work at first, and would in consequence have got no pay. It was found necessary, therefore, early to alter this system to one of a fixed salary modified by fines and rewards. The salary was fixed, fines imposed, and any one excessively fined, dismissed. On the other hand to the best workers in the proportion of one to every six of the whole number of Abstractors employed, pay at the rate of 20 rupees a month was given, the best workers being taken to be those whose fines were smallest and whose outturn of work was largest. The fixed salary was afterwards raised to 20 and the competition pay to 25 rupees a month, but even this is, in my opinion, too low. The Census Office was of enormous size. It was a temporary office. The chance of service in it leading to anything was very slight. The only attraction was the pay, and in order therefore to draw men of the requisite stamp a high rate of pay was essential.

Another matter of the greatest practical importance in connection with abstracting is the size and weight of the schedule and the manner of its printing. It should be as small as possible with but a very small margin. Half the paper on which the schedule for the present census was printed was taken up with headings or margin. It should not be in diglot, but in one language, as many schedules in each language as may be required being printed. The column for the consecutive number of the names should be omitted. The width of the columns in the

Size and weight of the schedule.

schedules in use in 1881 might be altered in several instances with advantage; the columns for name, civil condition, education, and infirmities should be reduced, and that for religion increased. The schedule should be printed on one side of the paper only, and on the reverse the instructions for filling it up. It should be machine-ruled. It should be printed on the toughest and lightest paper that can be got; paper, no doubt, could be specially made for the purpose. We had here daily to move tons of record—a labor which should, of course, be as much reduced as possible. There seems to me to be but little advantage gained by retaining a separate schedule for each house, when the particulars for the house are to be filled up by an Enumerator, provided the particulars for each house are distinctly separated. Of course, when they are to be entered by the occupant, a separate schedule should be provided, and a note made against the house-number, the schedule being added at the end. The order of arrangement of the columns in the schedule is of very considerable practical importance. These should be grouped and arranged with reference to the forms of working registers, so that those particulars brought together in a working register should be close to each other in the schedule. Sex, which is common to all registers, should be in the centre of the schedule, not at one side as in the present case.

Translation.

In the present Census it was found necessary to translate all the Ooriyah schedules and a large portion of the Malayalam schedules. It saves far more than the value of the paper and the labor involved, not to write the translation on the same paper and over the original, but to rewrite the entries altogether on fresh forms. The difficulty of abstracting schedules translated as was done here was very great. I mention this as owing to the misconduct of the Malayalam and Canarese Abstractors, especially the former, the work was much retarded, and it may be matter for consideration whether these minor departments should not be altogether dispensed with, men to translate the schedules being alone employed.

Proposals as the method of Abstracting in future.

I have written in regard to the abstracting as above mainly on the supposition that the scheme followed in the present instance would be repeated in its main lines in future operations. But I do not think this necessary. So convinced am I by what I have seen of the value to be placed on the work of Enumerators compared with that of Abstractors, that I would place the whole work of abstracting on the Enumerators. The method of abstracting I would not alter. I would require working registers to be prepared by the Enumerators exactly as they were prepared by an Abstractor. These registers I would have checked and examined by the Supervisors and sent in to the Taluk Cutcherry, where the common particulars would be examined by a special establishment, and the registers would be made up into files of each register by circles exactly as was done in the Compilation Offices. These files, as well as the schedules, should be sent in to a Central Office, where they would be compiled.

The great danger is that the Enumerators having ascertained the totals in one register would invent the details in all the others, but this danger would, I believe, be almost entirely obviated if a register in every block or even a smaller proportion of the work were re-worked and tested in the Central Office, and if each Supervisor was given to understand that the work of his Enumerators would thus be tried and that he as well as his Enumerators would be held responsible in case any such practices come to light. It is with a view to the application of the above test mainly that I have said the schedules should be sent to a Central Office. Under any circumstances, numberless references would have to be made to them which would necessitate their submission.

The most obvious objections to the proposal all proceed on the ground that there is no guarantee that it would give accurate results. This is true, but there is a very high degree of probability that it would do so, as may be seen from a comparison of the results of the rough totals and of tabulation, and this objection is common to it with all results obtained by a single working.

On the other hand it would be very expeditious and very cheap. It would be expeditious, for it appears from the statement given on page 120 that it took 150,000 men one day to complete the abstracting in this Presidency. The whole number of Enumerators was 75,981, or the work of abstracting, allowing, be it remembered for incorrect abstracting, would occupy each Enumerator two days. Thus a work, which it would take an abstracting office of 1,000 men 150 days to complete, would be completed in two days.

It would be cheap, for if it is not necessary to pay Government servants for the taking of the census which occupies the Enumerators close on 15 days, at one time and at least one at another it would not be necessary to pay them for the work of abstracting their blocks, a work occupying but two days more. It is also probable that, for the same remuneration as was given on this occasion, those Enumerators who were paid could be induced also to undertake the abstracting of the block. It might be necessary to pay some of the 30,620 unpaid non-official Enumerators, but even of these very many would do the work for nothing for the same reasons which induced them to work as Enumerators for nothing, and hence I do not believe that the expenditure on the necessary extra establishment in the taluks and as remuneration to Enumerators would amount in all to more than the other expenditure on the enumeration, and might by proper management be kept much lower. This would represent a very great saving on the present system.

The compilation should however be carried out in a Central Office as was done on this occasion.

B.—*The Tabulation of the Working Registers.*

The compilation or tabulation office opened experimentally.

No Compilation Office was started here until several districts had been completed in the Abstracting Offices. It would have been better, for many reasons, had the tabulation proceeded *pari passu* with the abstracting. I was however enabled in September 1881, owing to the method of working an Abstracting Office being then well understood, to start a small Compilation Office of about 80 men under my own personal direction, in which I could experimentally develop the system which should be followed in the larger offices, in which I could ascertain the proper rates of work, and could find out and obviate or remove many difficulties inherent in the work. On 1st December 1881, this nucleus was strengthened and placed in a separate building under the charge of one of my Assistants, and after a little, the Superintendents and Supervisors of the Abstracting Offices were attached to it for a week at a time, so that they might learn and understand what would be required of them in a Compilation Office. As the abstracting work gradually came to a close, a Compilation Office was opened in each Abstracting Office, and as the Abstractors passed out of work in one they were attached to the other. Thus confusion was avoided and uniformity of system was secured in all the offices.

Method of preparing the records prior to compilation.

When a circle or group of 20 villages in each charge was passed for compilation in the Testing Department of the Abstracting Office, the population as brought out by tabulation, was compared with the total population as ascertained from the rough totals and the difference noted. If the difference exceeded 20 persons (the population of a circle ranged from 2,000 to 5,000 persons), the cause of the difference was invariably investigated and noted in a register kept separately for each district, and the error, if any, was removed. In very many cases the difference was investigated even when it was less than 20. When all the circles of a charge had thus been examined the charge was passed on to another set of men, who verified by the record registers that every part of block had been abstracted, and who arranged all the blocks and parts in their proper order according to the sanctioned Supervisor's list. The charge was then ready for despatch to the Compilation Offices. On receipt in the Compilation Office of the registers from an Abstracting Office, the first step was their arrangement for the purposes of compilation. With a view to this, the registers were again examined with the sanctioned Supervisor's list, and, when correct, the block and part number was endorsed on each. They were then made over to Attenders, who distributed them into bundles, each containing but one sort of register. When the registers for each circle had thus been completely distributed those of each different kind were firmly stitched together and the records were then ready for issue for work.

Village tables explained.

From the explanation of the principles on which the working registers were constructed, it will be seen that each minor total in them represented, in most instances, almost any given fact in regard to a number of persons of the population in connection with one or more other facts. With a view to separate and reduce these combinations to those required for the final forms certain tables in number and kind as shown below had to be prepared:—

No. 1. Civil condition, age, and sex for Hindus divided into—

(*a*) Single.	(*c*) Widowed.
(*b*) Married.	(*d*) Not stated.

No. 2. Civil condition, age, and sex for Mahomedans divided into—

(*a*) Single.	(*c*) Widowed.
(*b*) Married.	(*d*) Not stated.

No. 3. Civil condition, age, and sex for Christians divided into—

(*a*) Single.	(*c*) Widowed.
(*b*) Married.	(*d*) Not stated.

No. 3-A, B, C., &c. Similar tables for each other religion met with.
No. 4. Age and sex for Hindus.
No. 4-A. Numbers under instruction with age and sex for Hindus.
No. 4-B. Numbers instructed with age and sex for Hindus.
No. 5. Age and sex for Mahomedans.
No. 5-A. Numbers under instruction with age and sex for Mahomedans.
No. 5-B. Numbers instructed with age and sex for Mahomedans.
No. 6. Age and sex for Christians.
No. 6-A. Numbers under instruction with age and sex for Christians.
No. 6-B. Numbers instructed with age and sex for Christians.
No. 6½, 6½-A, 6½-B, &c. Similar tables for each other religions as met with.
No. 7. Civil condition without age.
No. 8. Mahomedan sects with sex
No. 9. Christian sects with sex.
No. 9½. Christian sects with race and nationality.

No. 10. Religion and sex.
No. 11. Caste, sex, and civil condition.
No. 12. Mahomedan tribes.
No. 13. Language and sex.
No 14. Birth-place and sex.
No. 15. Occupation of males.
No. 15½. Occupation of males in towns with age.
No. 16. Occupation of females.
No. 17. Education with sex.
No. 18. Religion, age, and sex of persons of unsound mind
No. 19. Religion, age, and sex of the blind.
No. 20. Religion, age, and sex of deaf-mutes.
No. 21. Religion, age, and sex of lepers.

Stages in compilation.

In passing, however, from the working registers to the final tables there were three distinct steps—

1. The preparation of the above tables by blocks or parts, from which the total for each circle was obtained. Each part was one line in a table. There were 167,044 parts in the Presidency.
2. The preparation of the same tables by circles, from which the total for each charge was obtained. Each circle was one line in a table. There were roundly 4,000 circles in the Presidency.
3. The preparation of the same tables by charges from which the total for each district was obtained. Each charge was one line in a table. There are 21 districts in the Presidency.

The method in accordance with which the tables required in each of the above stages were prepared was exactly the same in every stage.

Operations needed in each stage and departments of the office.

In each step the following operations had to be gone through :—

1. The figures were copied or posted from the working registers by parts, circles, or charges in one department of the office, and the statements were totalled at foot under each heading of the table. This department was called the Posting Department. The Posters were not allowed to post the grand total of males and females for each part, circle, or charge, or to bring out the grand total of persons in the table.

Posting Department.

2. The tables prepared in the Posting Department were sent into another department called the Comparing Department, where the figures and headings, as copied, were read and compared with the entries in the working registers, from which the tables under comparison had been posted. In this department, the numerous errors of posting, other than numerical, were corrected. This department was important, for, if the number of persons was correctly entered, but under a wrong heading it was in this department that the error should be discovered.

Comparing Department.

3. From the Comparing Department the tables passed into the Examining Department in which the grand total of males and females for each part, circle, or charge, was posted and totalled ; the foot totals of the Poster were also totalled and the result compared. If any difference was found it was the duty of the Examiner to examine the Poster's totalling. If that was found correct he had to total each line across the table and compare the result with the total as obtained from the working register or tables as posted by himself. If, in this way, he found any figure wrong he had no power to correct it. He merely marked the erroneous figure and thus indicated where the error was, but not what it was

Examining Department.

From the Examining Department the tables passed into the Testing Department. There are in the final tables several repetitions of the same fact. Sex, for instance, runs through them all. All such repetitions were ascertained, and a statement was framed and printed to exhibit them all at one glance. The Testing Clerk's duty was to post into this form all the requisite totals as they stood in the tables. He thus was enabled to see at one glance what tables were wrong. He then turned to the original tables and corrected all the errors as marked by the Comparing and Examining Departments. If these corrections did not bring the table right, he himself compared or examined it, or returned it for re-comparing or re-examining as the case might be. He also prepared an extra table, in which the totals in each age period as obtained from the first six village tables were compared and thus tested.

Testing Department.

Under the above system, it will be seen that neither in the Posting nor the Comparing Department could the clerks fudge, because they did not know and could not find out without trouble it was not worth their while to take what they had to fudge up to. In the Examining Department they could not fudge, because they had no power to correct. The only

Where danger of fudging lay and likelihood of its occurrence.

department, therefore, in which fudging was possible was the Testing Department. This, as in the Abstracting Offices, was placed under a very strong body of Supervisors, who had to verify and initial every correction made by the Testing Clerks.

Check on error, or misconduct.

But there was another and a very strong check on error, or misconduct. As in the Abstracting Offices, so in the Compiling, all errors were punished by fine; but in the Compiling Offices this fine instead of going to Government was awarded to the man who discovered the error. It is, I think, to be regretted that this principle was not applied to the Abstracting Offices also. The rate of fine varied, of course, very much in the different departments. It was very low for the men in the Posting Department, much higher for those in the Comparing Department, and so on, the rate being fixed and varied according to experience. As the tables were completed in each department they were sent to a Checking Supervisor, who noted the mistakes claimed and prepared the fine and reward list. This was published each day in each section, and any Clerk could, at any time, challenge his fine and satisfy himself of its correctness. Thus, as no man in one department could tell to whom his work would go in another, and as the department higher up the line got the fines imposed in all below it, there was the strong incentive of a considerable reward towards the discovery of error—how strong will be understood from the fact that on some few occasions Testing Clerks earned as much as 25 rupees in a month by the detection of error: and hence it was early understood that the only way in which a Clerk could protect himself was by honest and careful work. Every correction or alteration in a table had to be initialled and dated by the Clerk making it, and any omission in this respect carried the penalty of fudging. As any difference or error in the earlier stages had to come out in the later, and as the tables had to pass through unknown hands in the future, no one fudging could tell where his fault would be discovered, and though fudging may have been attempted in a few isolated cases, I cannot think it escaped notice when the next operation came on.

Further checks in particular cases.

Apart from the checks above described, there were others which operated on single tables. Thus, by posting Tables 1, 2, and 3 from Working Registers No. I and Tables 4, 5, and 6 from No. VI, both registers and tables were checked. Similarly sex, religion, age, civil condition, and education in compilation came under the check of a double-posting, of which the effect was just the same as that of a double abstracting, to which I have already referred. It is worthy of remark that the preparation of final statements, of which the subject-matter was completely or doubly checked, either in abstracting or in compilation, gave no trouble, but all those, of which the subject-matter was not subjected to any such check have required an immense amount of verification and examination before the statement could be issued as correct.

Compilation of caste and occupation statements.

The labor of compiling the caste and occupation particulars has been so difficult that it is necessary to notice the matter in some detail.

Caste statements.

Caste was abstracted in conjunction with sect and civil condition. Three statements have had, therefore, to be prepared in connection with caste—

I. The final Form No. VIII;

II. A *classified statement* showing under each main head and sub-head of caste, the details of sex, civil condition, and sect (Form No. VIII-A), and

III. An *alphabetical list* showing every caste name returned in the schedules, together with its classification, the locality from which it was returned, and the total number of males and females under it (Form No. VIII-B).

Basis of caste tables.

The basis of all these tables was the same. It was a Village Table No. 11 prepared to show under each name given in the schedules the sect and civil condition of the persons under that caste name.

Final Form No. VIII.

I. The final Form No. VIII was prepared directly from the classified statement by merely totalling the items of sect and civil condition, and therefore calls for no remark.

Final Form No. VIII-A.

II. The preparation of the classified statement, Form No. VIII-A, was carried out as follows :—

Dr. Cornish's heads and sub-heads retained.

The Census Report for 1871, Volume II, Statement No. 16, contains lists of 3,208 caste names said to have been returned in the Tamil, Telugu, Malayalam, and Canarese Schedules of that year.* These are exhibited under 17 main divisions, under which Dr. Cornish found it convenient to group them. The same volume contains a Statement No. 11 showing the details of the population of every district under each sub-division of the 17 main castes. These sub-divisions amount to 309. It was decided to follow the classification that had been adopted by Dr. Cornish not only because this classification was authoritative, and no other course had been laid down in

* Tamil, 984; Telugu, 1,047; Malayalam, 477; Canarese, 700.

this respect, but also to facilitate a comparison of the results, if desired. To do this, it was necessary to know (1) the main caste to which each sub-division appertained, and (2) the particular sub-head to which each caste name as returned in the schedules belonged. On the first point the report above referred to contained sufficient information; but as to the second the records available did not indicate more than the main head of caste under which each name could be shown. In other words, we knew what the different sub-divisions under each main caste were, and we also knew under what main caste each caste name fell, but we could not tell under which *particular sub-division* of the main caste any caste name should be classified. For example, of the second main caste Kshatriya we knew that its sub-divisions were—

Necessity for the Key to Dr. Cornish's classification.

A. Bondili.	D. Kshatriyulu.
B. Bhatrázulu.	E. Rázulu.
C. Kondarázulu.	F. Rájput.

and that the following schedule names had been shown under it—

(1) Arasar.	(8) Pándukulam.
(2) Arasarkulam.	(9) Rájavar.
(3) Áriya Kshatriyas.	(10) Rája.
(4) Bhatrázu.	(11) Rázu.
(5) Bondiliyar.	(12) Rangarájakulam.
(6) Bráhmana Sing.	(13) Rásaputrar.
(7) Manu.	

but we had nothing to show the connection between these two sets of names.

The first step was, therefore, to supply this missing link. It had been lost and had to be worked out. This task was entrusted to the Assistants in charge of the Tamil and Telugu Departments. The former prepared the information for Tamil castes, and that for Telugu, Malayalam and Canarese were prepared by the latter with the assistance of the Malayalam Superintendent and a Canarese Supervisor. The manner in which the lost key was reproduced was as follows. Every caste whose name was the same or nearly the same as a sub-order, or whose signification was the same, was referred to that particular sub-order; while all those whose names afforded no such clue were put down under a "general" sub-order bearing the same name as the main head, and this, judging from the population exhibited under each sub-head, appears precisely what had been done at the last census. Thus in the example quoted above,

Preparation of the Key.

Bondili was classed	2 : 1 Bondili,
Bhatrázulu	2 : 2 Bhatráju,
Arasar, Arasarkulam, Rájavar, Rája, Rázu, Rangarájakulam	2 : 5 Rázulu,
Rájaputrar, Bráhmana Sing	2 : 6 Rájput,

and the remaining names, which could be traced to none of the sub-orders in particular, viz.:—

Áriya Kshatriyas, Pándukulam, Manu — were classed 2 : 4 Kshtriyulu, a general head.

After the preparation of classified lists of the castes for all languages in the manner described above, all the lists were compared with a view to the grouping of the sub-heads, and many of these, which were merely corresponding names of the same caste in different languages, or between which there was practically no difference, were united. In this way, the 309 sub-orders were reduced to 254.

Grouping of same sub-heads of Caste.

In the following scheme the main heads, and sub-heads ultimately arrived at, are shown. The names within brackets are the sub-heads of 1871 united in the present census return for the reasons above explained.

Scheme of sub-heads in present tables.

Heads and Sub-Heads of Caste.

1.—*Bráhmans.*

1. Árádhya Bráhman.
2. Ándrha Vaishnava.
3. (Bráhman / Bhattulu) Bráhman.
4. Bengáli Bráhman.
5. Bráhman Gurukkal.
6. Gouda Bráhman.
7. Golkonda Bráhman.
8. Gujaráti Bráhman.
9. Konkana Bráhman.
10. Mádhva Bráhman.
11. Maháráshtrulu.
12. Murikináti Bráhman.
13. Niyógulu.
14. Nambúri.
15. Óriya Bráhman.
16. Smárta Bráhman.
17. Shrívaishnava.
18. Velnáti Bráhman.
19. Vaighánasulu.

2.—*Kshatriyas.*

1. Bondili.
2. Bhatrázulu.
3. Kondarázulu.
4. Kshatriyulu.
5. Rázulu.
6. Rájput.

3.—*Shetties.*

1. Achcharavákam Shetti
2. Béri Shetti.
3. Savari Kómati.
4. Kásikár Shetti.
5. Kómati.
6. Shetti.

4.—*Vellálars.*

1. Aliya.
2. Árékulam.
3. Aravakápu.
4. Agamudayan.
5. { Balija / Kavare } Balija.
6. Duluva.
7. E'kari.
8. { Gazula Balija / Valayal Kavare } Gazula Balija or Valayal Kavare.
9. Gouda.
10. Illuvellani Kamma.
11. Kápu.
12. Kamma.
13. Kodide Kápu.
14. Kalingulu.
15. Koppula Velama.
16. Kárakát Vellálar.
17. Kamblattán.
18. Kodikkálkáran.
19. Kapiliyan.
20. Kondakatti Vellálar.
21. Kárthám.
22. Kurup.
23. Konga Vellálar.
24. Linga Balija.
25. Mótáti Kápu.
26. Morasu Kápu.
27. Mutrátcha.
28. Manne Kápu.
29. Nagarálu.
30. Náir.
31. Nambiyáshár.
32. Okkili.
33. Patra.
34. Panta Kápu.
35. Pákanáti Kápu.
36. Pedakanti Kápu.
37. Perike Balija.
38. Pálayakár.
39. Pándiyan.
40. Panikkar.
41. Reddi.
42. Sózhiyan.
43. Tóta Kápu.
44. Telagálu.
45. Tondamandala Vellálar.
46. Toddiyán.
47. Tokkilavar.
48. Tayyambádi.
49. Velama.
50. Vellálar.
51. Vantarlu.
52. Vupparialu.
53. Vellán Shetti.
54. Yiluvan.

5.—*Idaiyars.*

1. Erra Golla.
2. { Golla / Idaiyars } Golla or Idaiyar.
3. Gouda Golla.
4. Kannadi Golla.
5. Karna Golla.
6. Kuruba Golla.
7. Kurumbar.
8. Kákustha Golla.
9. Mushti Golla.
10. Púri Golla.
11. Púja Golla.
12. Peddéti Golla.
13. Yádavulu.

6.—*Kammálars.*

1. { Áchári / Kamsala / Karamala / Kammálan / Pénchála } Kamsala or Kammálan.
2. { Akasála / Tattan } Tattán.
3. { Badáyi / Tachchan } Tachchan.
4. Kantchara.
5. Káse Battudu.
6. Karumán.
7. Kulatópan.
8. Tolkdlan.
9. Varakurup.
10. Vishvakarma.

7.—*Kanakkan.*

1. Balaga Karnam.
2. Baisyia Karnam.
3. Bommali Karnam.
4. { Karnam / Kanakkan } Karnam.
5. Majjulu Karnam.
6. Mushti Karnam.
7. Ódiya Karnam.
8. Sír Kanakkan.
9. Srushti Karnam.

8.—*Kaikalar.*

1. Chitrakár.
2. Dévángulu.
3. Darzulu.
4. { Jándra / Séniyan } Jándra.
5. Janapa.
6. Kaikalar.
7. Padmasále.
8. { Pattagár or / Pattnúlkár } Pattnúlkár.
9. { Rangári or / Rangúni } Rangári.
10. Sále.
11. Togata.

9.—*Vanniyan.*

1. Anuppan.
2. Bailugár.
3. Dévadiga.
4. Kallan.
5. Maravan.
6. Másádika Banta.
7. Máppan.
8. Nattambádi.
9. Palli
10. Padayáchchi.
11. Parivéram.
12. Shúdra.
13. Uppiliyan.
14. Vanniyan.
15. Udayán.

10.—*Kushavan.*

1. { Anturán / Kummara / Kushavan } Kummara or Kushavan.

11.—*Sátáni or Mixed Castes.*

1. Ándi.
2. Ambalakáran.
3. Bairági.
4. { Bógam / Dási } Dási.
5. { Dásari / Tádan } Dásari.
6. { Jangam / Lingadhári } Lingadhári.
7. Kúrmapu.
8. Kúttádi.
9. Kongam.
10. Nágavásulu.
11. Nattuvan.
12. Nandikulama.
13. Óchchan.
14. Pandáram.
15. Sátáni.
16. Tamballa.
17. Viramushti.

12.—*Shembadavan.*

1. Anjátikaran, Besta, Bóya, Keveto, Kabbéra, Mukayan, Valayan } Besta or Valayan.
2. Jálari, Neyala, Shembadavan } Shembadavan.
3. Karaiyár.
4. Pattanavan or Pattapu.

13.—*Shánán.*

1. Billava, E'ruvan, I'diga, I'ndra, Shánán, Tíyar } Shánán or I'diga.
2. Gavundla.
3. Halépaik.
4. Kanishan.
5. Shegádi.
6. Sondi.

14.—*Ambattan.*

1. Ambattan, Bhandári, Hajám, Mangala, Návidan } Mangala or Návidan.
2. Nádavan, Vilakatalavan } Nádavan.

15.—*Vannán.*

1. Agasa, Asavan, E'kali, T'chákala, Vannán } T'chákala or Vannán.

16.—*Others.*

1. Áryans.
2. Allakuduman.
3. Adiyan.
4. Ambalavási.
5. Budubudukala
6. Badagar.
7. Banjári or Kudiya.
8. Bandári.
9. Chentchu.
10. Chittajallu.
11. Chivili.
12. Dombar, Gáradi } Dombar.
13. Erukala.
14. E'nádi.
15. E'rádi.
16. Gándla.
17. Gujaráti.
18. Gadabalu.
19. Gangeddula.
20. Gandu Konkana.
21. Hindus.
22. Ilai Vániyan.
23. Irular.
24. Jains.
25. Jetti.
26. Jalagadugu.
27. Játapu.
28. Jógi.
29. Jakkula.
30. Kannadiyan.
31. Koravar.
32. Kurumar.
33. Kulabhrashtulu.
34. Kóya.
35. Kódulu.
36. Khándílu or Kondavándlu.
37. Kótar.
38. Káyats.
39. Lambádi.
40. Maráthí.
41 Malayáli.
42. Márvádi.
43. Mondi Banda.
44. Malayamán.
45. Médara.
46. Malva.
47. Mudukar.
48. Nókkan.
49. Oddar or Odde.
50. Óriya or Ódhrulu.
51. Pámula.
52. Páno.
53. Pichchiguntla.
54. Pandárlu.
55. Panishavan.
56. Piravay.
57. Paidílu.
58. Shekkan, Vániyan.
59. Sugáli.
60. Singamvandlu.
61. Sipti or Sénápati.
62. Savaralu.
63. Sundílu.
64. Téli or Telukulu
65. Tallúri.
66. Tódar.
67. Tótarayar.
68. Turayan.
69. Vipravinódulu.
70. Upparavan.
71. Vélaikkáran.
72. Vorugubotlu.
73. Véttaikáran.
74. Védan.
75. U'digavándlu.
76. Others.

17.—*Pariahs.*

1. Bárika or Bhairi.
2. Sakkili, Cheruman, Mádiga, Paduma Kanakan } Mádiga.
3. Ghási, Gódári, Holeya, Mála, Paraya or Paravar } Mála or Parayan.
4. Pálayam.
5. Relli.
6. Tchatchtchadi.
7. Valluvan.

An alphabetical index was then prepared and printed for each of the languages. This contained all the caste names recorded in 1871, with figures indicating the order and sub-order assigned to each as entered in the above scheme.

Classification of Castes how effected.

The classification of the caste names was effected on the single Village Table No. 11, which, as above explained was prepared to show the sect and civil condition of every caste name which occurred in each charge in the Presidency.

Preliminary Classifications.

Each of the classifying Clerks was furnished with a copy of the printed index, and was to classify only those items which he could trace in this index; every new caste not already in the index was to be left unclassified and entered in a reference book, to be disposed of by the Assistant in charge of the Caste Department.

Disposal of references by the Assistant.

These references were first disposed of by the Assistant, who classified as many of the referred castes as he could, leaving out those which were unknown and indistinctly written. New caste names thus classified by the Assistant were duly recorded in a list which served as the standard or authority for all classifications not already in the index.

Reference to schedules, &c.

A reference to the schedules in the case of those castes which were indistinctly written or unknown had next to be made. This was very tedious work, and was one of the chief items of work after the classification was commenced, since, in order to find the name in the schedules, it was necessary to trace the entry back through each prior stage up to the schedule. Sometimes, however, a known caste name was arrived at in the search through the village tables and working register, when, of course, further search stopped. Schedule references were also necessary in the case of many clearly-written entries, which were unknown or not easily recognized as caste names, for the occupation and agnomen of males often threw light on the meaning of the caste terms. For instance, the term ரசகன் (Rasakan), though clearly written, was difficult to identify as a caste name until a reference to the schedule showed the occupation to be சலவைசெய்தறது (washing clothes), when it was at once seen that the term was meant for the Sanskrit ரஜக (Rajaka, washerman). Again, where the caste could not be made out and the schedule showed கிராமணி (Grámani) affixed to the name, the appropriate classification was easily made. In some instances the same words with a slight difference in spelling gave the name of a different caste, *e.g.*, கொல்லன (either Kollan, smith or Golla, shepherd), செட்டி sometimes written ஜெட்டி, கவுட and கவுண்டன, பள்ளி and பள்ளன, பணியன் and பணிக்கன், செக்கான் and சகிலி, வண்ணான் and வன்னியன, and so forth. In such cases a reference to the name and occupation was indispensable.

Final disposal by the Assistant.

After schedule references, the unclassified items were finally disposed of by the Assistant. The rules under which castes, not originally in the index, were dealt with by the Assistant were as follows:—

Rules followed in classification.

(1). Where the expression used to denote a caste name consisted of a word which was a proper caste name, and of other words which did not mean a caste, or were not recognizable as caste names, the former alone was taken into consideration in classifying the entry, *e.g.*, Asaiva Vellála (meaning Vellálas, who eat meat, as opposed to "Saiva Vellála," meaning those who abstain from meat) was classified as "Vellála"; "Tenúr Vannán" was classified as "Vannán"; "Terkatti Agambadi" was classified as "Agambadi."

(2). Where it was a combination of two or more caste names the classification was (subject to the exceptions noticed below), made on the inferior of the two castes, *e.g.*, "Para Vannán" was classified as "Pariah," "Kaikala Vellála" was classified as "Kaikalar."

(3). In many charges the word "Sudra" was found added as a prefix or affix to all castes other than Brahmins. In such cases the castes were classified as if the word "Sudra" had not been entered at all, *e.g.*, "Sudra Kusavan," "Sudra Kaikalar," "Sudra Vaisier," "Sudra Sátáni," &c., were respectively classified as "Kusavan," "Kaikalar," "Vaisier," "Sátáni," &c.

(4). Where the words Lingadhári, Lingáyet, Siváchár, Námadhári, &c., were used as a caste, they were so classified; but where they occurred in conjunction with other caste names, they were taken only as a sect, which is what they properly represent.

(5). Where language names, such as Kannadi, Tamil, Telugu, Maráthí, were used in conjunction with caste names, such as "Kannadi Okkili," "Telungan Baliji," &c., they were treated as surplusage and the classification made on the caste name proper, such as "Okkili," "Baliji," &c., but where they were used by themselves as caste names, then the latter classification was adopted. For instance, "Kannadi" was classed as "Kannadiyan," "Maráthí" as "Maráthíyan, &c."

(6). Where the expression was a combination of the names of two or more sub-orders belonging to the same main order, the choice of a classified head was more difficult, *e.g.*, Gouda Kápu, Tottya Kambalam, Vaduga Pálayakár, Dévángu Séniyan, &c. It was not possible in these cases to assign to these sub-orders their relative position in the scale of precedence, and all that could be done was to adhere to one classification throughout.

(7). Where all available sources of information had been tried and failed the caste was classified as "Others." This had to be done to a very large extent in the Telugu districts and chiefly in the Agency tracts.

Final Form No. VIII-B.

The Village Table No. 11 compiled for castes showed under each caste name as tabulated the number of males and females separately for each civil condition and sect. From this the *total* males and females for all sects and civil conditions under each caste had to be again worked out by totalling. The figures thus obtained were posted for each charge, and from these caste lists by charges, a general list for each district

was compiled. For the entire Presidency, four such lists had to be prepared, one for each of the languages, viz., Tamil, Telugu, Malayalam, and Canarese, in which the schedules were written. Upwards of 20,000 caste names, it will be seen, were returned in all languages, viz., Tamil, Telugu, Canarese, and Malayalam.

Difficulties in the preparation of this statement.

The labor of preparing this statement was very great, owing, mainly, of course, to the very large number of caste names under which the population had to be exhibited. This led to very many difficulties. For example, the consequent bulk of the books, into which the postings, &c., had to be made, made the search for an item a work of much labor even with the best-ordered books. The arrangement was, however, in some instances defective, partly owing to the nature of the work and partly to the ingrained and insuperable slovenliness of Native Clerks without special training or experience in alphabetical arrangement, in doing work of this kind. Neatness and arrangement they have no idea of. They often contented themselves with arranging the names with reference to the initial letter only, and, consequently, wherever the number of castes under a letter was large, as was the case with the letters K (ಕ), T (ತ), S (ಸ), P (ಪ), M (ಮ), V (ವ), &c., the work of posting and comparing the lists was very much retarded owing to the continual search necessary to find out a name. Where the alphabetical arrangement stopped with the first letter, and where it was possible for a name to occur anywhere within 30 or 40 pages, it was easy to forget that a name had been once already entered, and this often led to repetitions in the list—another cause of delay in preparing the final list.

These difficulties will sufficiently indicate the nature of this work. To win one's way through a mass of detail in a tangle, such as it was inevitable from the nature of the case, must more or less arise even with the best agency, and which must inevitably arise with the agency and under the circumstances of hurry and pressure under which these returns have been prepared, was to say the least of it trying to the patience.

Necessity for double-posting.

There was only one way to ensure that the most outrageous errors did not come into this work and that was to apply to it the principle of a double-posting. This was done by preparing a classified statement from the alphabetical list, which, with a view to checking the classification, was separately classified and comparing the results with the classified statements containing sect and civil condition, the latter being totalled for the purpose. The results, which should be identical, were compared, and every difference had to be investigated and corrected. This process was gone through for every charge, for every district, and for each language. It was a very laborious one, for whenever a difference was found, the total under that head had to be analyzed and resolved into the entries of which it consisted which had to be traced back through the different stages until the error was discovered. This course, while it ensured correctness, really added little to the work, for it was possible to dispense with the comparison of both the classified table and the alphabetical list, and it was found that so completely did this process bring out all error that the examination of the tables gave no trouble at all.

Causes of difference.

Some of the causes of these differences were as follows :—

The similarity, real or apparent, of the different caste names.—Some examples are :—(*a*) Vanniyan (Sudra) 9 : 14 ; Vaniyan (oil miller) 16 : 58 ; Vannán (washerman) 15 : 1 ; (*b*) Chetti 3 : 6 ; Jetti 16 : 25 ; (*c*) Sakkili (cobler) 17 : 2 ; Sekkán (oil miller) 16 : 58 ; Sákala (washerman) 15 : 1 ; (*d*) Gouda 4 : 9 ; Gounda 9 : 9 ; (*e*) Ambattan 14 : 1 ; Ambalattan 11 : 2, &c. This, in the hands of careless men, was a constant source of error and confusion.

Errors in the printed indexes furnished to Classifiers, many of which were owing to mistakes or ambiguous classification in the list printed in the Census Report for 1871, which was the basis. The following instances will illustrate what is here meant :—Telugu, (*a*) "Bhatrázu," admitted of two classifications in 1871 as one of the sub-orders under "II. Kshatriya" as well as one of the minor castes under "IV. Vellálars ;" Telugu, (*b*) "Janapa" under orders IV and VIII ; Canarese, (*c*) "Rangári," under orders VIII and XVI ; Telugu, (*d*) "Pichchiguntla," under orders XI and XVI ; Telugu, (*e*) "Jógi," under orders XI and XVI ; Telugu, (*f*) "Márvádi," under orders III and XVI ; Tamil, (*g*) "Agambadiya Pariari," was classed under order "IV. Vellálars," whereas it should clearly fall under "XIV. Ambattan."

Until such errors or ambiguities came to notice, such castes were classified under one or other of the "orders" at the option of the Classifiers. When they did come to notice the errors were duly corrected, and in cases where there was a choice of classification, the main orders, under which a name was a distinct *sub-order*, was chosen in preference to that in which it simply appeared as a *minor caste*.

The principles indicated (*vide* page 129) as having been observed in classification were only the gradual outcome of experience, as each difficulty came to notice, one after another, and was settled. No such rules were available at the outset, and much that had been classified before the laying down of a rule had afterwards to be corrected with reference to it. If the method of compiling the caste and occupation returns followed in 1871 had been fully stated, and if the keys to the preparation of the statements, if any such existed, had been properly prepared, printed, and preserved, I have no hesitation in saying that quite 50,000 rupees could have been saved to Government in the present operations.

Occupation Statements.

Turning now to occupation, it will be seen that the statements which have been prepared are:—

No. XII, or a statement showing the occupations of the population, with sex.
No. XII-A, or a statement showing the occupations of the population of towns, with sex.
No. XII-B, or a statement showing the occupations of males in towns, with age.
No. XII-C, or a statement showing the occupations followed by the agricultural population in conjunction with agriculture.
No. XII-D, or a statement showing the occupations followed by the agricultural population in towns in conjunction with agriculture.

Identity of Nomenclature in Compilation.

The occupations were returned by the Enumerators in that form of words, or by that name, which seemed best to describe the fact. In the working registers the nomenclature used by the Enumerator was exactly followed by the Abstractor. Under the orders of the Census Commissioner this identity of nomenclature was preserved in the village tables, and under circumstances which it is not necessary to go into here the same was continued to the charge tables. But it is, of course, at once obvious that many of these modes of entering the occupations are the same, and that by grouping the entries of occupations under appropriate group heads an immense amount of labor would be saved in the compilation of the statements.

But here at once the questions arise, What system of grouping should be adopted? and How should that grouping be carried out?

System on which the Occupations were to be exhibited.

The system on which the occupations were to be exhibited had been fixed before the census was taken. It was that known here as Dr. Farr's, and which had been adopted in the English census of 1871 and previous censuses. The only question, therefore, was to what order, sub-order, or group head in that classification the entries of occupation should be assigned. It was generally easy to ascertain this, but in some instances it was necessary, owing to the circumstances of the country, to invent new group heads or to separate into two or more groups the occupations shown under one group head by Dr. Farr.

Difficulty as to Group Heads.

This latter necessity at once introduced a difficulty. If group heads were to be formed for the whole of India, each provincial group head must comprise the same occupations or some separable portion of them. Then alone would the group heads for all India *really* represent some fact. In the statements for this province the group heads have been arranged so that each is co-extensive with, or a definite portion of, some of the group heads for India. The late issue of the latter caused much embarrassment here, and to it must be attributed the delay which has occurred in the preparation of the occupation statements. How this occurred will be understood from the following example. Take persons whose occupations are connected with emigration. It was originally my intention to bring all these together under one group head; but in the Census Commissioner's classification and arrangement, which, of course, I have followed, Superintendent of Emigration is in Order 1, Sub-order 2; Emigration Recruiter, Agent, Manager, Clerk in Order 6, Sub-order 1; Emigration Maistry in Order 16, Sub-order 2; and Emigration Peon in Order 7, Sub-order 6. But emigration is a matter of some importance in the Presidency, and, in order that it may be possible to learn anything about the numbers of those engaged in bringing it about, it has been necessary for me to form group heads in each of the orders indicated.

Manner of carrying out the grouping of entries of Occupation.

The manner in which the grouping of the vernacular entries of occupations was carried out was, so far as I could make it, the same as that followed in England. This method is to obtain complete lists of the entries of occupations, and to assign to each entry its order, sub-order and group head. Copies of this list are put into the hands of the clerks, who are required to compile under the appropriate order, sub-order, and group head the number of persons found entered under each entry of occupation in the schedules.

Lists required for classification of Occupations.

Thus the classification and grouping of the entries of occupation implies two processes and two lists. First, it is necessary to prepare a scheme of group heads in each order and sub-order, and to assign to each group head the entries of occupations which may be judged to belong to it; and secondly, to prepare an alphabetical list of the entries of occupation, which list is useful for two purposes, (1) to serve as an index or dictionary of the entries, and (2) to ensure that no entry is twice entered under different group heads.

Preparation of Occupation lists.

With a view to the preparation of these lists, the District Officers were required to forward to the Board of Revenue vernacular lists of the occupations entered in Dr. Farr's list and likely to be found in their districts; but the lists sent up in reply were practically of no use, and contained but bald and often unintelligible translations, which, of course, never occurred in the schedules. I had therefore lists of the entries of occupation found in a large number of circles and charges prepared, and I went through and classified each with reference to its English meaning. The first part of the

list I prepared in English, and with reference to this I completed alphabetical lists of the entries in English, Tamil, Telugu, Malayalam and Canarese.

Mode of completing the lists.

These latter lists were of course not complete, and in order that they might be made so, the Classifiers were required to enter in a reference list all entries of occupations not found in them, which were daily classified, and when disposed of were entered in a standard list. The Classifiers were required to complete these lists (which were interleaved for the purpose) in manuscript every two or three days, adding to them the newly classified entries of occupation.

The possession of these vernacular lists, which, with the scheme of group heads to which they have been referred, have been separately printed, will enormously simplify the task of preparing the occupation statements in any future census, for it will enable classification to be made on the working registers, on which it seems obvious it should be made, but which was prevented on this occasion by the want of lists like those referred to.

Danger in Classification.

The great danger and difficulty in working this system is that the Classifying Clerks will write down any classification which may seem to them appropriate, instead of referring to the list for the correct classification. It requires trustworthy men if this is not to happen, and its prevention is difficult in proportion to the numbers employed Owing to the press and hurry with which all the census work has had to be done it was imperative to employ a large number on the work, and hence very careful and full testing and examination of the Classifiers' work was necessary.

Checks on Classification.

I therefore early organized a Classification Testing Department of picked Classifiers, whose duty it was to test not less than 25 per cent. of all the Classifiers' work, and a severe fine was imposed on the Classifier for every incorrect or unauthorized classification made by him, which was awarded to the Tester; since if the occupation was not in the classified list it should be entered in the reference list, there was no excuse for error. As a further safeguard 30 per cent. of both the Classifiers' and Testers' work was examined and checked by picked men of the Supervisor grade; but, notwithstanding, I fear the classification may not be perfectly uniform throughout owing to the ignorance and want of experience of the Classifiers in the beginning. Much of the work has, however, been again gone over and checked in the process of verifying the statements to be presently adverted to.

Strength of the Offices.

In the annexed statements marked C, D and E, I give the strength of the offices employed in compilation and the work done by them.

C.—*Statement showing the Daily Average Strength of the Compilation Office.*

Month and Year.	Daily average strength of the Office.	Daily average number of Officers of and above Supervisors.	Daily average number of Testing Clerks.	Daily average number of Compiling Clerks.	Daily average number in the Record Department.			Daily average number of Miscellaneous Clerks.	Daily average number of Absentees.
					Record-keepers and Assistants.	Arranging Clerks.	Posting strokes into figures.		
Original, or Compilation by Circles.									
August 1881	29	3	...	26	...	...	...	...	2
September „	79	6	...	73	.	.	...	...	4
October „	88	6	4	67	4	7	...	...	3
November „	92	7	9	68	2	6	...	...	6
December „	270	17	14	230	2	7	..	...	18
January 1882	944	73	53	782	15	7	11	3	79
February „	1,363	107	159	1,055	26	...	4	12	124
March „	1,025	103	176	714	22	.	...	10	99
April „	402	64	76	236	17	...	...	9	32
May „	323	17	68	203	13	...	...	22	21
Final, or Compilation by Charges and Districts.									
January 1882	26	...	...	26	...	...	...	...	...
February „	64	...	...	64	...	...	...	...	5
March „	295	...	7	278	1	..	...	9	19
April „	733	23	32	640	5	...	...	33	55
May „	288	28	32	192	1	...	...	35	14
June „	422	42	39	300	14	...	...	27	23
July „	419	39	51	314	13	...	...	2	26
August „	390	34	32	311	11	...	..	2	25
September „	361	31	24	281	7	7	...	11	28
October „	279	28	17	217	7	...	..	10	12

D.—*Statement showing the Numbers employed in the preparation of the Returns of Area, Houses and Population for each Village.*

Month and Year.	Daily average strength of the Office.	Daily average number of Officers of and above Supervisors.	Daily average number of Testing Clerks.	Daily average number of Compiling Clerks.	Daily average number of Absentees.
April 1882	67	5	...	62	4
May „	66	5	...	61	4
June „	26	...	...	26	2
July „	3	...	...	3	...
August „	11	...	...	11	2
September „	1	...	...	1	...
October „	2	...	...	2	...

E.—*Abstract of Work done in the Compilation Office.*

Month and Year.	Number of days worked.	Total number of Compiling Clerks.	Total number of Parts or Circles compiled in all the 15 Village Tables.	Average number of Parts or Circles per man per day.	Remarks.
Original.					
From 1st September up to 30th November 1881	74	2,748	300,048	109	In parts.
December „	25	3,041	304,134	100	
January 1882	25	8,845	847,797	96	
February „	24	9,042	903,212	100	
March „	27	4,251	303,875	71	
1st to 10th April 1882	8	135	7,721	57	
Final.					
March 1882	27	4,992	42,717	8	In circles.
April „	24	5,346	25,514	5	

The numbers employed in June 1882 and subsequent months have been employed in two ways: first, mainly in the preparation of the classified statements of caste and occupation; and second, in the work of verification.

Verification explained.

The latter branch of the work needs some explanation. It is necessary to premise that the principle on which the census statements have been prepared has been to show exactly what the Enumerator stated. This is obviously the only principle on which census returns can have the slightest value. No one wants to know the results of the caprices of fancy of an ignorant Tabulator. If, therefore, the Enumerator's statement was clear and exact, however absurd that statement might appear, it has been followed. I tried in some instances to verify the returns in the schedules by subsequent local inquiry, but experience showed it would probably take years to obtain the required information even in a small fraction of the many thousand cases when inquiry was required, and that it would be impossible to get any information in a vast number of others. I was therefore compelled to abandon all hope of correcting the statements in this way and to confine my efforts to ensuring that they exactly reproduced the original return in the schedules.

Apparent absurdities in the Statements.

When the final statements of occupation, language, and birth-place were worked up, many facts which seemed absurd appeared in them. These absurdities might be due to errors of the Enumerators in the original return or to errors in the compilation. With a view to remedying all avoidable error it was necessary to trace back to the schedules every such suspicious item and to examine its treatment at every stage. This has been systematically done, and it may be accepted as certain that all such real or apparent absurdities are to be found in the original return. In the language statement, for instance, every item except those under Tamil, Telugu, Malayalam, Canarese, Ooriyah, Tulu, Sawara and a few others has been verified back and found in the schedules. To very much the same extent the occupation and birth-place statements have been verified.

Correctness in many instances and meaning of the return.

I have scrutinized a very large number of entries myself. Many of these items, which we might be inclined to regard as suspicious, are clearly made intentionally. In some the original entry has been corrected and made more definite and unmistakable. For instance, it seems strange to find women

in the Subordinate Medical Service; yet there are certainly twelve female vaccinators or inoculators returned in the schedules. In many instances the meaning of the return is that the woman is the wife of a man who follows the occupation stated, in which she aids him.

Many pure errors and the causes of the error.

Many of these items, however, are pure errors. Their most fruitful source is the improper use of the word "ditto," but many are due to carelessness or folly. Of the latter many are to be found in the schedules filled up by private householders, especially Europeans, who have frequently shown the grossest carelessness in drawing up their schedules. For instance, an officer of high rank in the army has returned his wife and daughter as "soldiers." In the language statement the entry of Latin as the mother-tongue of one male is found. This was made by a Roman Catholic Priest with his own hand. Perhaps he reasoned that he was a child of the Church. The language of the Church was Latin. Hence his mother-tongue was Latin. A very light-complexioned English gentleman has returned his birth-place as "Timbuctoo," and would take no notice when requested to correct the entry. He could not be prosecuted as it was not possible to prove the entry false.

Estimate of the accuracy of the Tabulation.

Turning, in conclusion, to the amount of error which has occurred in the tabulation, there are, it will be seen, again two degrees of reliability. Owing to the application of the principle of a double working to totals, sex, religion, age, civil condition and education, we may be morally certain that the statements as finally worked represent exactly the results as worked up by the Abstractors. In regard to the other statements there is unfortunately no analysis of error on which to base an opinion, but some general considerations enable a fair estimate of this work to be arrived at. Owing to the system of comparison and verification, the latter of which I have just referred to, I think it highly probable that the language and birth-place statements are correct so far as compilation is concerned. The key to the grouping of dialects in the former statement should be preserved. The materials for determining how a dialect should be treated are extremely scanty. Error ought only to arise in the case of birth-place from the numbers being referred to the wrong place when there were two or more places of the same name. The village name was frequently given, and there are several villages of the same name in different parts of the Presidency. In such cases the rule was to refer the numbers to the place of that name nearest the block under tabulation. In caste, up to the preparation of the eleventh village table for charges, there was only one working of the particular; but as the civil condition was an integral part of the table, subject to the check of a double working, as the tables had to be gone over several times to get the civil condition right, and as every process subsequent to the preparation of the eleventh village table by charges has been doubly worked, I do not think any material error can have crept in. In occupation the most likely source of danger is erroneous classification. Every effort was, as I have said, made to prevent this by a powerful check on the original working, and the verification of these statements has been very close. I see no reason to believe that any serious error can have crept into this statement in the process of working.

G. STOKES,
Deputy Supt. of Census Operations.

MADRAS CENSUS OFFICE,
9th November 1882.

Additional Table No. 1, *showing the Population of the Madras Presidency (exclusive of the State of Pudukóta and of the Agency Tracts of Ganjám, Vizagapatam, and Gódávari) living in each year of Age on the night of the* 17*th February* 1881—*Famine and Non-Famine Tracts being separately given.*

Ages.	Non-Famine.		Famine.		Total.	
	Males.	Females.	Males.	Females.	Males.	Females.
0	276,339	282,841	167,892	172,839	444,231	455,680
1	196,004	207,435	100,468	105,583	296,472	313,018
2	217,606	234,595	95,562	100,748	313,168	335,343
3	272,976	296,400	113,318	127,021	386,294	423,421
4	268,483	277,718	132,118	139,394	400,601	417,112
5	264,041	270,204	144,153	150,117	408,194	420,321
6	258,743	262,359	152,820	157,745	411,563	420,104
7	252,848	254,279	158,510	162,648	411,358	416,927
8	246,177	246 056	161,608	165,185	407,785	411,241
9	239,163	237,770	162,469	165,692	401,632	403,462
10	226,780	229,501	152,004	155,273	378,784	384,774
11	215,716	221,321	143,013	146,233	358,729	367,554
12	205,865	209,929	135,358	138,441	341,223	348,370
13	197,126	199,959	128,906	131,775	326,032	331,734
14	189,397	191,272	123,526	126,120	312,923	317,392
15	182,590	183,732	119,099	121,366	301,689	305,092
16	176,611	177,212	115,502	117,389	292,113	294,601
17	171,373	171,589	112,631	114,105	284,004	285,694
18	166,794	166,751	110,377	111,409	277,171	278,160
19	162,797	162,587	108,640	109,211	271,437	271,798
20	159,302	158,989	107,329	107,427	266,631	266,416
21	156,248	155,880	106,355	105,975	262,603	261,855
22	153,560	153,171	105,637	104,730	259,197	257,951
23	151,177	150,765	105,098	103,771	256,275	254,536
24	149,040	148,592	104,669	102,886	253,709	251,478
25	147,095	146,586	104,286	102,064	251,381	248,650
26	145,288	144,687	103,890	101,251	249,178	245,938
27	143,574	142,836	103,430	100,402	247,004	243,238
28	141,907	140,989	102,857	99,470	244,764	240,459
29	140,250	139,102	102,133	98,419	242,383	237,521
30	138,570	137,152	101,214	97,215	239,784	234,367
31	136,829	135,077	100,086	95,833	236,915	230,910
32	135,002	132,888	98,746	94,252	233,748	227,140
33	133,064	130,557	96,824	92,454	229,888	223,011
34	130,997	128,080	94,408	90,430	225,405	218,510
35	128,445	125,781	91,580	88,432	220,025	214,213
36	125,062	122,779	88,419	85,938	213,481	208,717
37	121,048	119,219	84,999	83,048	206,047	202,267
38	116,587	115,236	81,385	79,854	197,972	195,090
39	111,843	110,960	77,641	76,447	189,484	187,407
40	106,722	105,359	73,420	72,093	180,142	177,452
41	101,830	100,182	69,406	68,090	171,236	168,272
42	97,159	95,422	65,591	64,408	162,750	159,830
43	92,701	91,044	61,970	61,023	154,671	152,067
44	88,446	87,015	58,533	57,906	146,979	144,921
45	84,385	83,298	55,276	55,038	139,661	138,336
46	80,507	79,865	52,190	52,394	132,697	132,259
47	76,804	76,683	49,271	49,947	126,075	126,630
48	73,281	73,725	46,510	47,682	119,791	121,407
49	69,905	70,963	43,899	45,588	113,804	116,551
50	66,542	68,524	41,305	43,547	107,847	112,071
51	63,343	65,874	38,920	41,669	102,263	107,543
52	60,349	63,446	36,719	39,931	97,068	103,377
53	57,532	61,195	34,682	38,307	92,214	99,502
54	54,868	59,083	32,786	36,773	87,654	95,856

Additional Table No. 1, *showing the Population of the Madras Presidency (exclusive of the State of Pudukóta and of the Agency Tracts of Ganjám, Vizagapatam, and Gódávari) living in each year of Age on the night of the* 17*th February* 1881—*Famine and Non-Famine Tracts being separately given*—(Continued).

Ages.	Non-Famine.		Famine.		Total.	
	Males.	Females.	Males.	Females.	Males.	Females.
55	52,330	57,079	31,014	35,309	83,344	92,388
56	49,901	55,146	29,346	33,895	79,247	89,041
57	47,558	53,259	27,766	32,516	75,324	85,775
58	45,284	51,392	26,259	31,156	71,543	82,548
59	43,065	49,521	24,814	29,803	67,879	79,324
60	41,150	48,088	23,417	28,445	64,567	76,533
61	39,117	46,309	22,057	27,072	61,174	73,381
62	36,991	44,245	20,728	25,678	57,719	69,923
63	34,793	41,957	19,419	24,259	54,212	66,216
64	32,550	39,494	18,128	22,987	50,678	62,481
65	30,283	36,910	16,935	21,536	47,218	58,446
66	28,007	34,248	15,667	19,952	43,674	54,200
67	25,747	31,554	14,347	18,280	40,094	49,834
68	23,520	28,864	13,007	16,562	36,527	45,426
69	21,344	26,219	11,669	14,834	33,013	41,053
70	18,714	22,967	10,003	12,471	28,717	35,438
71	16,431	20,189	8,577	10,530	25,008	30,719
72	14,460	17,824	7,368	8,952	21,828	26,776
73	12,763	15,821	6,346	7,683	19,109	23,504
74	11,306	14,124	5,488	6,669	16,794	20,793
75	10,058	12,689	4,767	5,864	14,825	18,553
76	8,988	11,474	4,164	5,227	13,152	16,701
77	8,070	10,435	3,658	4,715	11,728	15,150
78	7,278	9,538	3,233	4,298	10,511	13,836
79	6,589	8,752	2,871	3,947	9,460	12,699
80	5,976	8,044	2,560	3,633	8,536	11,677
81	5,276	7,133	2,269	3,221	7,545	10,354
82	4,639	6,306	2,016	2,847	6,655	9,153
83	4,062	5,558	1,783	2,510	5,845	8,068
84	3,541	4,881	1,573	2,204	5,114	7,085
85	3,074	4,268	1,383	1,927	4,557	6,195
86	2,657	3,712	1,212	1,676	3,869	5,388
87	2,286	3,203	1,057	1,446	3,343	4,649
88	1,959	2,743	918	1,238	2,877	3,981
89	1,671	2,327	792	1,051	2,463	3,378
90	1,420	1,956	679	883	2,099	2,839
91	1,200	1,628	578	735	1,778	2,363
92	1,011	1,339	488	605	1,499	1,944
93	849	1,089	408	492	1,257	1,581
94	721	874	338	395	1,059	1,269
95	600	691	274	313	874	1,004
96	486	535	213	242	699	777
97	379	398	159	180	538	578
98	281	282	112	127	393	409
99	198	189	73	85	271	274
100	130	118	44	53	174	171
101	77	68	24	31	101	99
102	42	37	12	17	54	54
103	20	18	5	8	25	26
104	8	7	2	3	10	10
105	3	3	1	1	4	4
106	1	1	...	...	1	1

Additional Table No. 2, showing the Births and Deaths from 1st November 1870 to 1st February 1881, corrected for short return and also for omission.

Age.	1870-71.		1871-72.		1872-73.		1873-74.		1874-75.		1875-76.		Total (1870—1876).		
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Both Sexes.
0— 1	113,295	103,022	118,775	98,517	111,742	95,062	121,279	99,840	133,179	109,929	133,789	109,582	732,059	615,952	1,348,011
1— 6	56,666	61,349	64,714	70,060	60,327	64,920	64,013	68,806	71,658	78,047	81.283	87,540	398.661	430,722	829,383
6—12	22,166	23.849	20,599	22,164	19,405	22,033	19,747	21,694	28,905	31,387	39,065	41,374	149,887	162,501	312,388
12—20	30,027	32,433	24,834	26,823	22,699	29,472	23,122	28,099	31,270	38,225	42,982	48,770	174,934	203,822	378,756
20—30	48,910	54,756	39,494	44,219	38,924	49,540	41,241	50,734	51,422	64,209	69,714	82,506	289,705	345,964	635,669
30—40	52,602	44,777	41,841	35,616	41,750	38,268	45,782	40,431	54,074	48,885	68,189	59,539	304,238	267,516	571,754
40—50	54,077	40,664	43,912	33,018	44,443	34,351	47,470	35,431	54,236	41.297	62.326	46,762	306.464	231,523	537,987
50—60	57,883	49,860	47,582	40,989	48,872	41,893	50,449	42,647	56,573	48,855	60,626	51,581	321,985	275,825	597,810
60 and upwards	88,252	96,066	78,758	85,736	79,250	86,657	84,725	93,183	94,744	105,183	98,608	107,420	524,337	574,245	1,098,582
Total Deaths ...	523,878	506,776	480,509	457,142	467,412	462,196	497,828	480,865	576,061	566,017	656,582	635,074	3,202,270	3,108,070	6,310,340
Total Births ...	701,109	668,418	649,811	627,460	603,219	582,687	641,798	617,165	711,347	689,177	743,875	713,162	4,051,159	3,898,069	7,949,228

Age.	1876-77.		1877-78.		1878-79.		1879-80.		Total (1876—1880).		From 1st November 1880 to 1st February 1881.		Total (1876—1881).	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
0— 1	147,985	124,908	97,867	85,369	91,546	75,179	129,201	103,217	466,599	388,673	46,536	37,177	513,135	425,850
1— 6	178,826	192,327	114,337	124,237	51,343	56,885	42,456	46,379	386,962	419,828	12,576	14,528	399,538	434,356
6—12	98,904	102.392	57,753	62,202	28,318	32,149	19,060	21,551	204,035	218,294	5,288	6,208	209,323	224,502
12—20	100,353	93.568	61,047	61,611	35,302	38,325	23,760	30,655	220,462	224,159	6,499	7,792	226,961	231.951
20—30	166.096	157,564	102,044	106,933	60,937	72,940	43,106	59,724	372,183	397,161	11,279	14,741	383,462	411,902
30—40	178,315	132,606	117,170	99,113	70.190	66,186	50.471	49,789	416,146	347,694	12,823	12,028	428,969	359,722
40—50	160,092	109,284	114,143	89,383	67,811	56,441	47,391	38,242	389.437	293,350	12,207	9,639	401,644	302,989
50—60	146,942	115,431	107,910	98,270	64,275	60,379	43,809	41,959	362.936	316,039	12,347	11,263	375,283	327,302
60 and upwards	208,643	201,305	159,333	179,513	93,314	111,996	64,504	79,440	525,794	572,254	19,733	24,073	545,527	596,327
Total Deaths ...	1,386,156	1,229,385	931,604	906,631	563,036	570,480	463,758	470,956	3,344,554	3,177,452	139,288	137,449	3,483,842	3,314,901
Total Births ...	602.875	576,715	402,338	381,397	529,573	506,613	746.970	715,452	2.281,756	2,180,177	214,288	208,066	2,496,044	2,388,243